Consumer Conservation Education

Educator's Manual

A product of the
Washington State Department of Commerce
Housing Improvements & Preservation Unit

2009

Department of Commerce
Innovation is in our nature.

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Preface

Consumer Conservation Education is now an essential element in many weatherization and energy assistance programs. As the need to provide consumer education grows, so does the need for a tool to assist in the process.

The Department of Commerce and its partners created the Consumer Conservation Education module. The module is an education and communication tool for weatherization programs and energy educators throughout the state. The module contains the following:

- Required Elements for Washington State Consumer Conservation Education Content
- Standardized Information
- *Educator's Manual*
- Presentation Documents: *Consumer Conservation Education Presentation, Tips for Reducing Your Energy Bill, 10 Actions You Can Take to Reduce Your Energy Bill, and Health and Safety Tips*
- *Consumer Conservation Education Fund Matrix*

Required Elements for Washington State Consumer Conservation Education Content:

- Space heating and cooling
- Water heating and use
- Lights and appliances
- Health and safety in relation to energy use and weatherization
- Utility bills: how to read a bill; how behavior and efficiency measures impact bill; communication with utility providers; utility provider services, including energy assistance programs
- Benefits of weatherization: what is weatherization; referral to weatherization programs; living in a weatherized home
- Energy assistance program referral
- Consumer-driven energy reduction action plan

Standardized Information: Consistent information is crucial when delivering conservation education; from first contact through completed home weatherization.

The *Educator's Manual* contains background information on the importance of conservation education, adult education tips, sample presentation documents with teaching tips, and additional resources.

The presentation documents (*Consumer Conservation Education Presentation, Tips for Reducing Your Energy Bill, 10 Actions You Can Take to Reduce Your Energy Bill, and Health and Safety Tips)* are designed as a springboard for weatherization programs providing conservation education. A clear understanding of the content and consumer needs will allow educators to select information from the documents as necessary to meet consumer needs in multiple settings. These documents can be modified in order to customize presentations and deliver program-specific information as long as presentations contain the required elements, standardized information, and Department of Commerce and ARRA logos. The presentation documents are PowerPoint slides; presentation notes are included in the *Consumer Conservation Education Presentation*.

Consumer Conservation Education Fund Matrix: The matrix is an easy-to-read breakdown of allowable conservation education expenses and reimbursement amounts.

If you have suggestions that will help make this a better tool, please send your comments to:

Washington State Department of Commerce
Housing Division/HIP Unit
906 Columbia Street SW
Post Office Box 42525
Olympia, WA 98504-2525

For additional copies of the Consumer Conservation Education Module, please visit the Weatherization page on the Department of Commerce website, http://www.commerce.wa.gov/site/500/default.aspx.

Credit for content and review of the Consumer Conservation Education Module goes to the following organizations:

- Clark County Department of Community Services
- Northwest SEED
- Spokane Neighborhood Action Partners
- The Opportunity Council

Thank You!

Why Consumer Conservation Education?

1. Increase knowledge about energy use: Consumers need knowledge in order to make decisions about their actions. Energy has been getting a lot of attention recently. Between the threat of global climate change, the economic impact of rising energy costs, and worries over the security of our energy sources, consumers are aware that their energy use has consequences to themselves and the world around them. While some energy uses are transparent, such as paying for gas every time you fill the tank of your car, others are relatively hidden. Most consumers do not give much thought to their water heaters which are using energy 24 hours a day. Other energy uses are completely hidden. Air leaks through recessed lighting fixtures cannot be seen or felt, but may be responsible for a significant amount of heat loss. In order to act to change their energy use, consumers need to understand how they are using energy and what they can do to reduce their use.

2. **Empower consumers to make changes in energy use:** After participating in energy efficiency education, consumers will be able to use the information and resources they have obtained to take charge of their energy use in several ways.

A. Behavioral changes – Consumers will choose those conservation techniques that apply to their own lives.

B. Knowledge-base for future appliance purchases – An understanding of appliance energy use enables consumers to make wise choices about the life-time costs of an appliance based on upfront costs and energy use, rather than just the upfront cost.

C. Increase comfort – Understanding the steps to reduce air leaks and make the most of heating and cooling systems will allow consumers to increase the comfort level of their homes.

D. Potential for energy assistance – The consumer conservation education module offers an opportunity for educators to inform consumers about various energy assistance programs through community action agencies, utilities, and other local organizations.

E. Monitor utility bills – Errors in billing, broken meters, and unknown energy users are easily spotted by consumers familiar with the information provided on their utility bills.

3. Decrease energy use by consumers: The major goal of this education effort and all of the programs affiliated with it is to decrease energy use. Decreasing energy use will decrease energy bills which can be a hardship to all households. A recent survey by the National Energy Assistance Director's Association shows that the need for Energy Assistance programs is growing in our current economy. Some consumers keep their homes at unsafe temperatures to reduce heating costs. Other consumers may go without food in order to pay the electric bill. Decreasing energy use will also protect the environment which is of increasing concern as the evidence for global climate change mounts. Local governments are setting goals to reduce greenhouse gas emissions, and energy use reduction can play a vital role in meeting these goals.

4. **Increase enrollment in assistance programs:** The American Recovery and Reinvestment Act includes a significant increase in funding for weatherizing homes. Spreading this information to eligible consumers and explaining what weatherization entails will encourage them to take advantage of this opportunity. While weatherization will reduce energy costs over the long-term, there are other energy assistance programs as well. The Low-Income Home Energy Assistance Program (LIHEAP) can assist with bill payment and utilities often have their own energy assistance programs for seniors and/or low-income customers.

How Adults Learn

Since you will be working primarily with adults, there are some things you will need to know about adult learning. The following information was obtained from *The MWX90 Protocol: A Model Minnesota Low-Income Weatherization Program for the 1990s*, and *Training Manual Volume 1: Client Education*, by Bonnie Esposito, Lydia Gill, and Lester Shen, published by the Underground Space Center, University of Minnesota.

1. Adults will take action and make changes in their lifestyle, if it is in their own self-interest to do so. Therefore, the educator must first help the consumer understand what is in their self-interest and point it out.

2. Adults will seek to learn information that they can put to immediate use. The educator should tailor the energy efficiency information to match the season (winter, spring, summer, or autumn).

3. The educator needs to present information that will have the biggest overall impact on energy savings and comfort for that consumer.

4. Adults will learn when they see the connection or relationship between the action they take and the benefit it produces. Educators need to help consumers see the connection, relationship, and applications of the consumer's actions in order to increase learning motivation.

5. Adults will learn more and are more receptive if they are directly involved in solving a problem. The educator should help the consumer:

A. see the problem,
B. guide the consumer towards imaginative solutions,
C. point out ways to determine the best solution,
D. make sure the consumer has the necessary skills and tools to take action,
E. allow the consumer to take action,
F. and show the consumer how to monitor the results. This could be as simple as letting the consumer measure the water temperature with a thermometer.

6. Adults will switch off if they feel uncomfortable, ignored, patronized, talked down to, used, laughed at, or embarrassed. The educator must never overlook actions the consumer has already taken or treat those actions as trivial. Always allow and encourage the consumer to tell you what they have done to save energy or improve comfort.

7. Adults will respond in a more meaningful way to goals that are in familiar terms. When establishing Action Plans be sure to allow consumers to phrase them in their own words.

8. Although the term educator conjures up images of a teacher, the educator must think of her/himself as a facilitator and not assume the role of teacher where the consumer is the student. As a facilitator, the educator must help the consumer learn by being a resource. Don't view the consumer as a dependent object or personality that can only function if the educator holds their hand and tells them how to do things.

9. An educator does not need to be all-knowing, but should be able to provide resources when unable to answer a question.

10. The learning environment is important. Try to set the meeting in a comfortable space with few distractions. Offer frequent breaks with time for discussion and questions.

Consumer Conservation Education Presentation

The following sections cover the consumer conservation presentation developed by the Washington Department of Commerce and its partners. The content may be applied in multiple settings with varying audiences, including energy educators, formal classroom or group presentations, across the desk, or in the home.

Slides are accompanied by background information and additional tips as necessary.

Shortened, sample versions of the presentation are located in the Resources section.

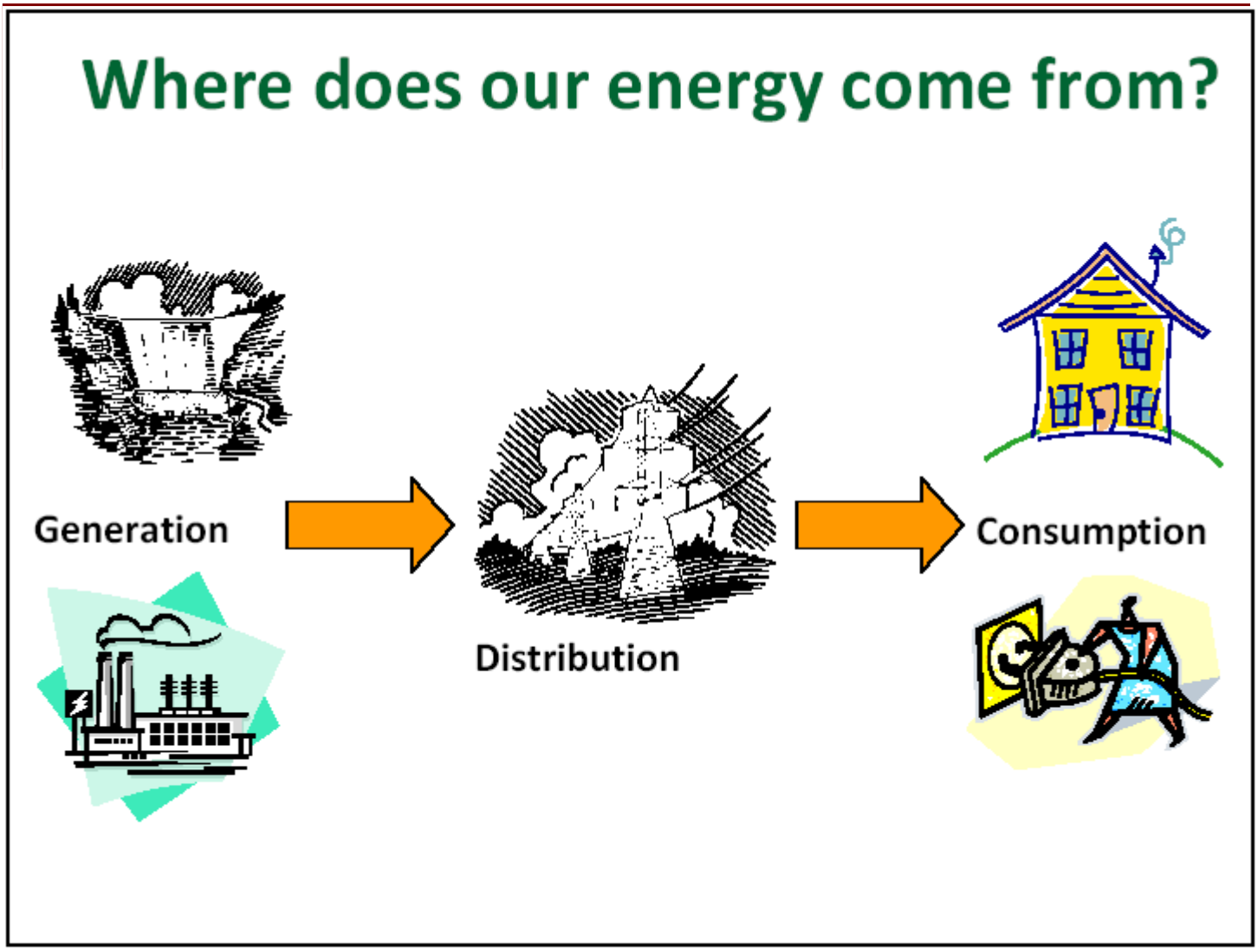
Setting the Stage:

Where does our energy come from and how do we use it?

Why use less energy?

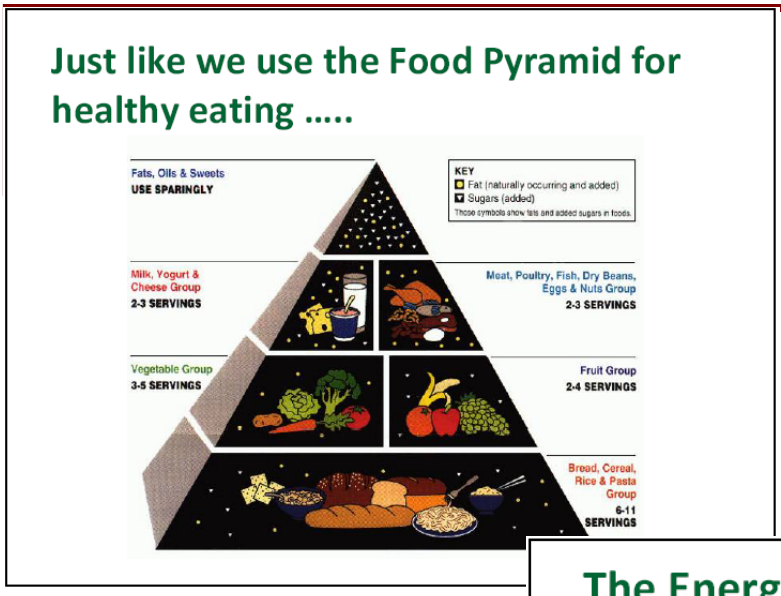
Saving energy is:

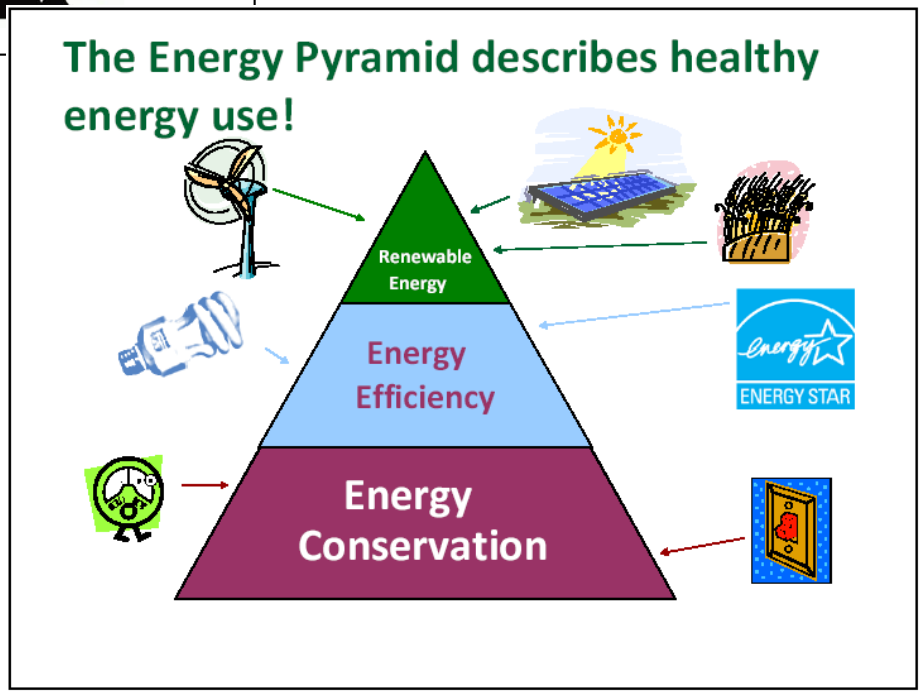
- Good for you
  - It will save you money
- Good for the environment
  - It reduces your carbon footprint
- Good for future generations
  - It will help assure that our children, their children, & all future generations have a cleaner, safer, greener world to live in



Background Information

- Washington is unique in that nearly ¾'s of our electricity comes from large hydroelectric plants. The rest of our electricity is generated from coal, natural gas, nuclear, wind, and other renewables. (Source: Energy Information Administration)
- The large amount of hydro electricity keeps our electricity rates relatively low compared to the rest of the country.
- However, these hydro plants cannot keep up with the growing electricity demand due to population growth. The most environmentally and economically sound way to deal with this issue is to change our behaviors and increase our energy efficiency to reduce our energy use.

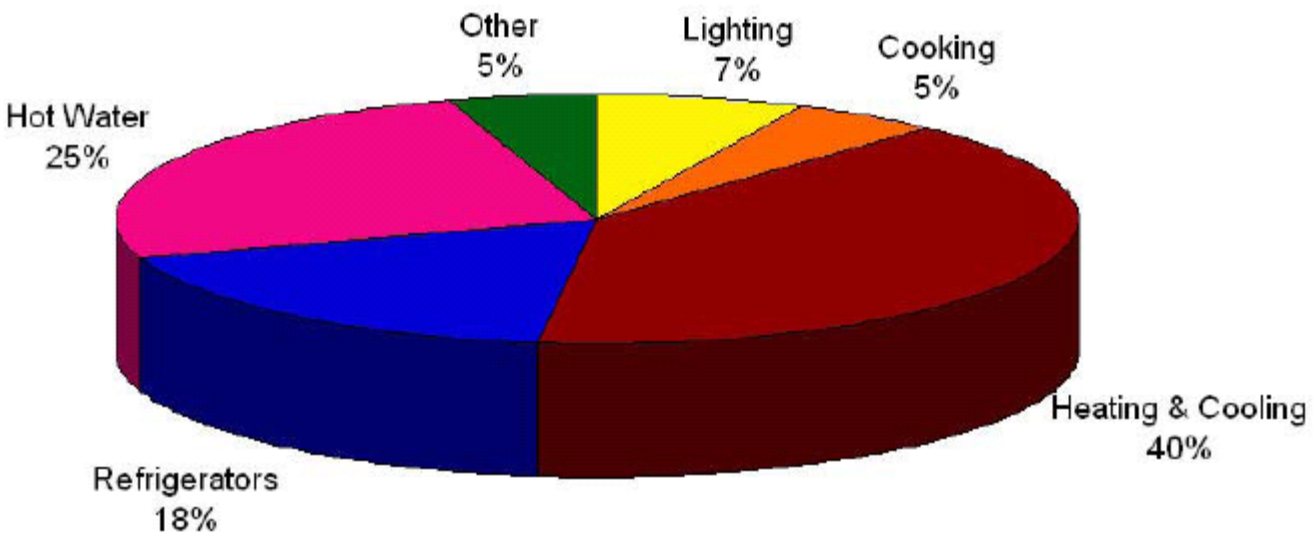




Background Information

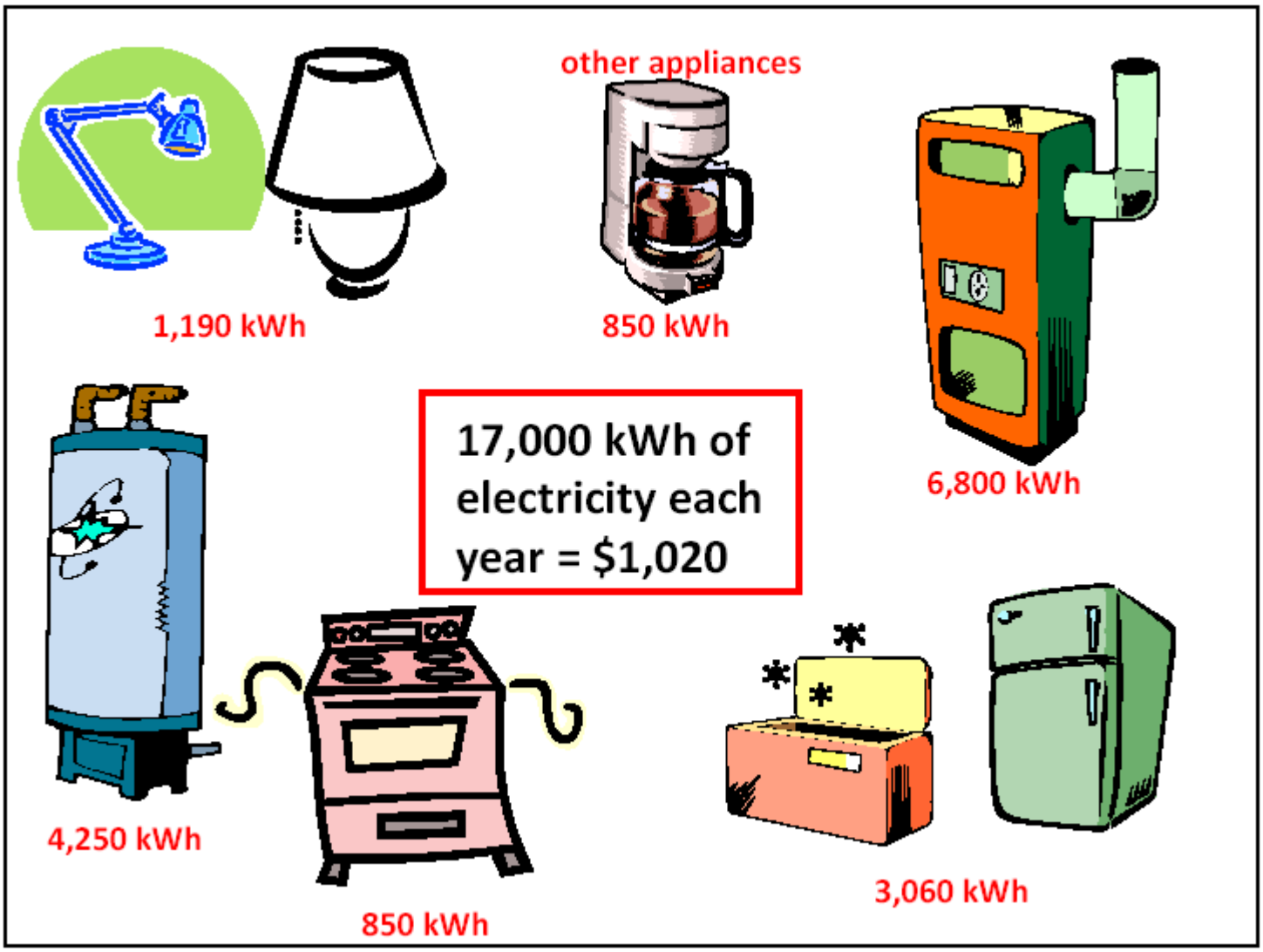
- The energy pyramid describes how we should prioritize changes in our energy use while working towards a sustainable energy future.
- Energy conservation involves behavioral changes and is the least costly way to reduce our energy use. It is the first area we should focus on when looking to reduce energy bills.
- Energy efficiency refers to how much work we get out for the energy we put in. Modern appliances are often much more energy efficient than older models. The government's Energy Star label is one way to identify efficient appliances as these appliances are guaranteed to use less energy than many models of the same appliance.
- It is especially important to think about energy efficiency and conservation when looking to create energy with renewable resources. Renewable resources are often harder to capture than fossil fuels, and more costly than conservation and efficiency measures.

Average Home Energy Use



Background Information

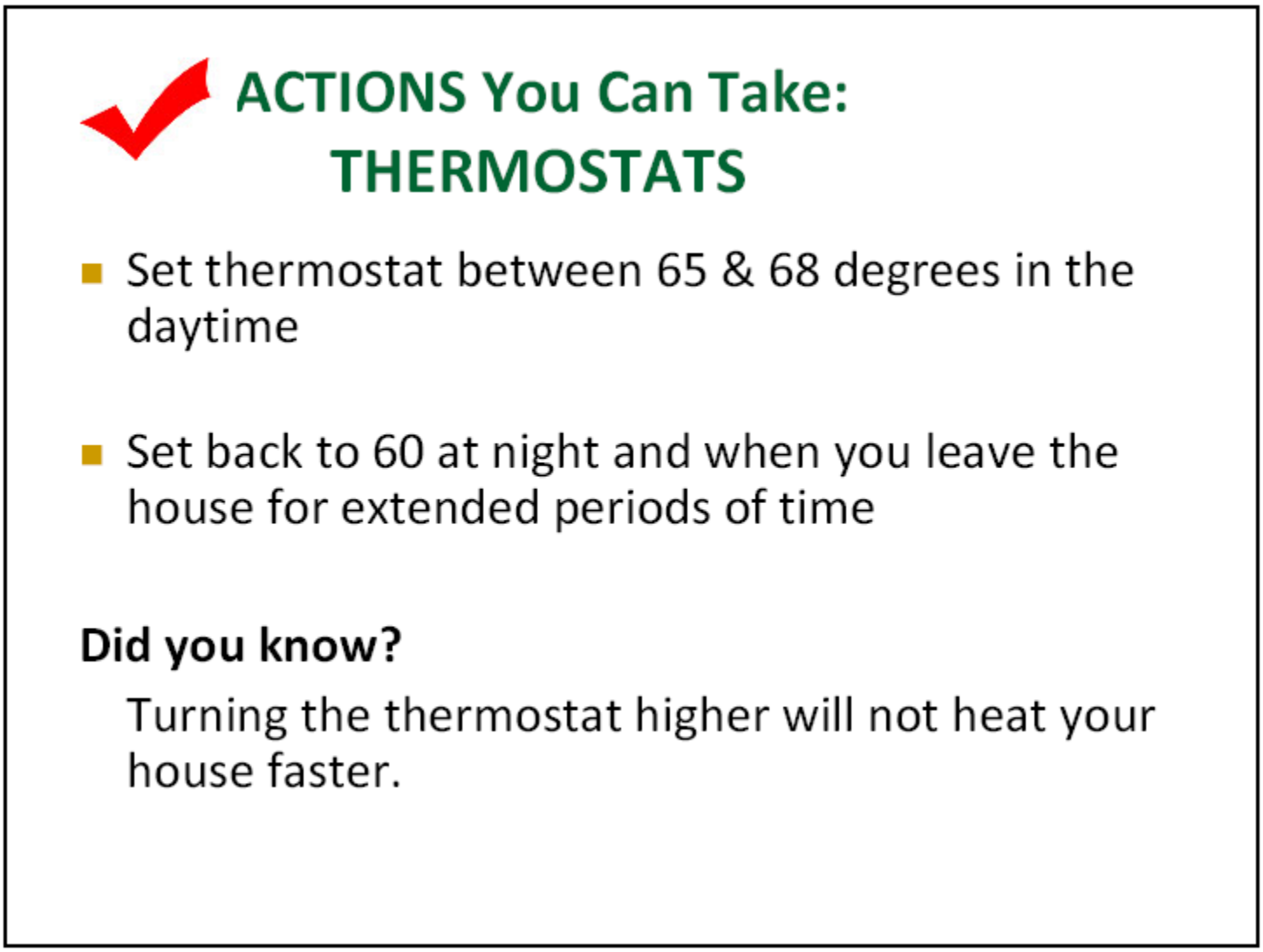
- The most efficient way to decrease home energy use is to target the largest uses.
- Address heating and cooling issues first – insulation, air leaks, inefficient heaters and air conditioners.
- Water heating is the next biggest energy use and can be decreased through increasing efficiency and conservation efforts—fixing water leaks, reducing use.
- Next address refrigerators, lighting, other – those energy uses that are required 24 hours a day tend to be the biggest users.



Background Information

- This is based on an energy cost of $.06/kWh.
- 1 kWh is equivalent to the amount of energy a 100 Watt light bulb uses if it is left on for 10 hours.
- The largest energy user here is the furnace which represents space heating.
- Notice that water heating, lighting, and the refrigerator all use a lot of energy.
- Some of these energy uses can be reduced by changing behavior – i.e. turning off lights, turning down the thermostat – while some of them are likely to require a change to a more efficient appliance – i.e. a more efficient refrigerator.

Tips for Reducing Your Energy Bill

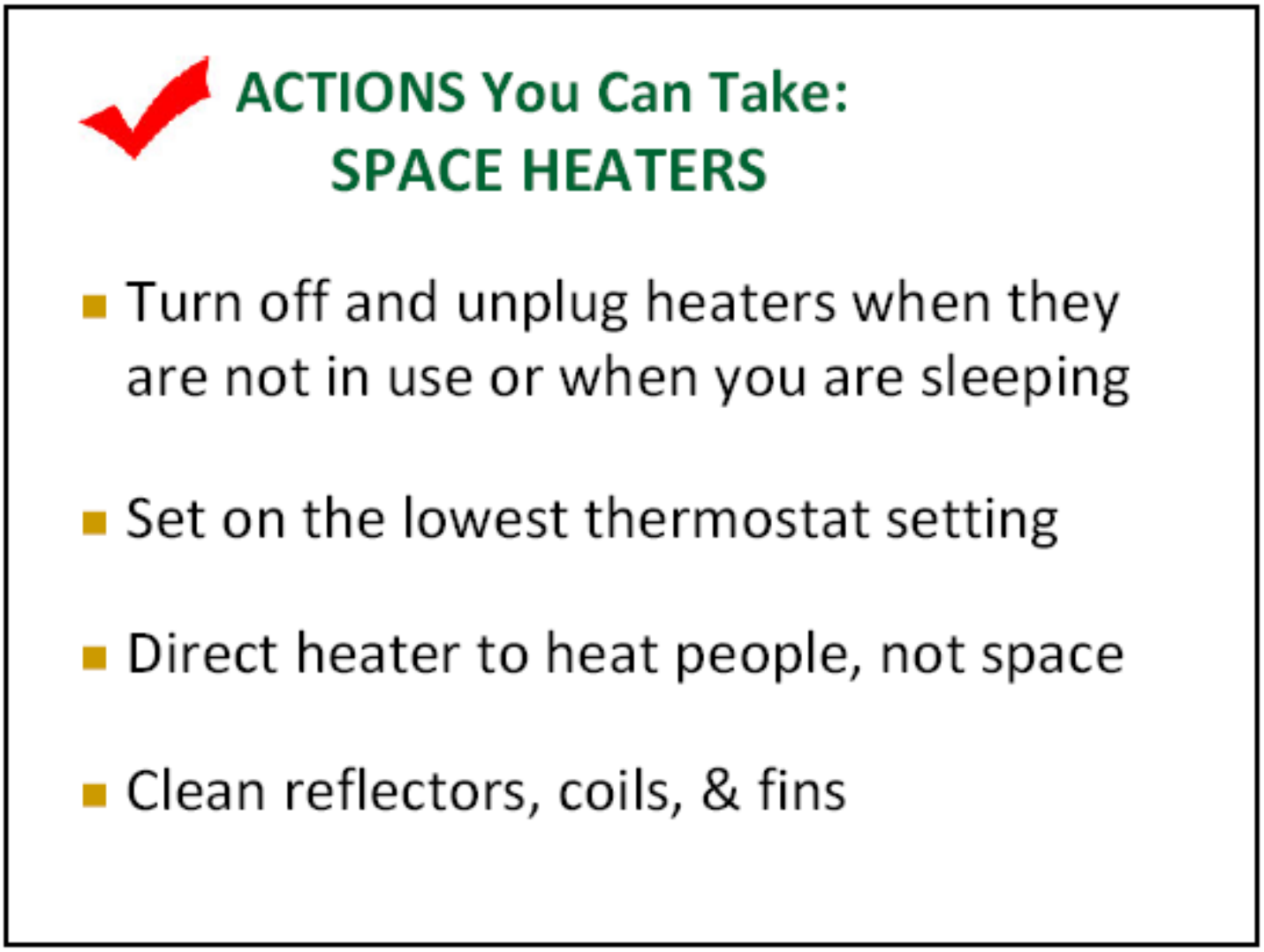


Background Information

- Because air continually moves through a home, all the air that is being heated while you are away is then escaping back to the outdoors. It is more energy efficient to lower your thermostat setting and not heat the air that is moving through your home. This is true even though it will take some extra energy to get your home back to a comfortable temperature when you return.
- Programmable thermostats are a good tool for homes with one or two central heating controls. These thermostats can be set to turn the heat on a short while before the occupants get up for the day and return home from work. Many programmable thermostats are not used properly, and assisting consumers with the setup of these tools can increase comfort and reduce energy use.

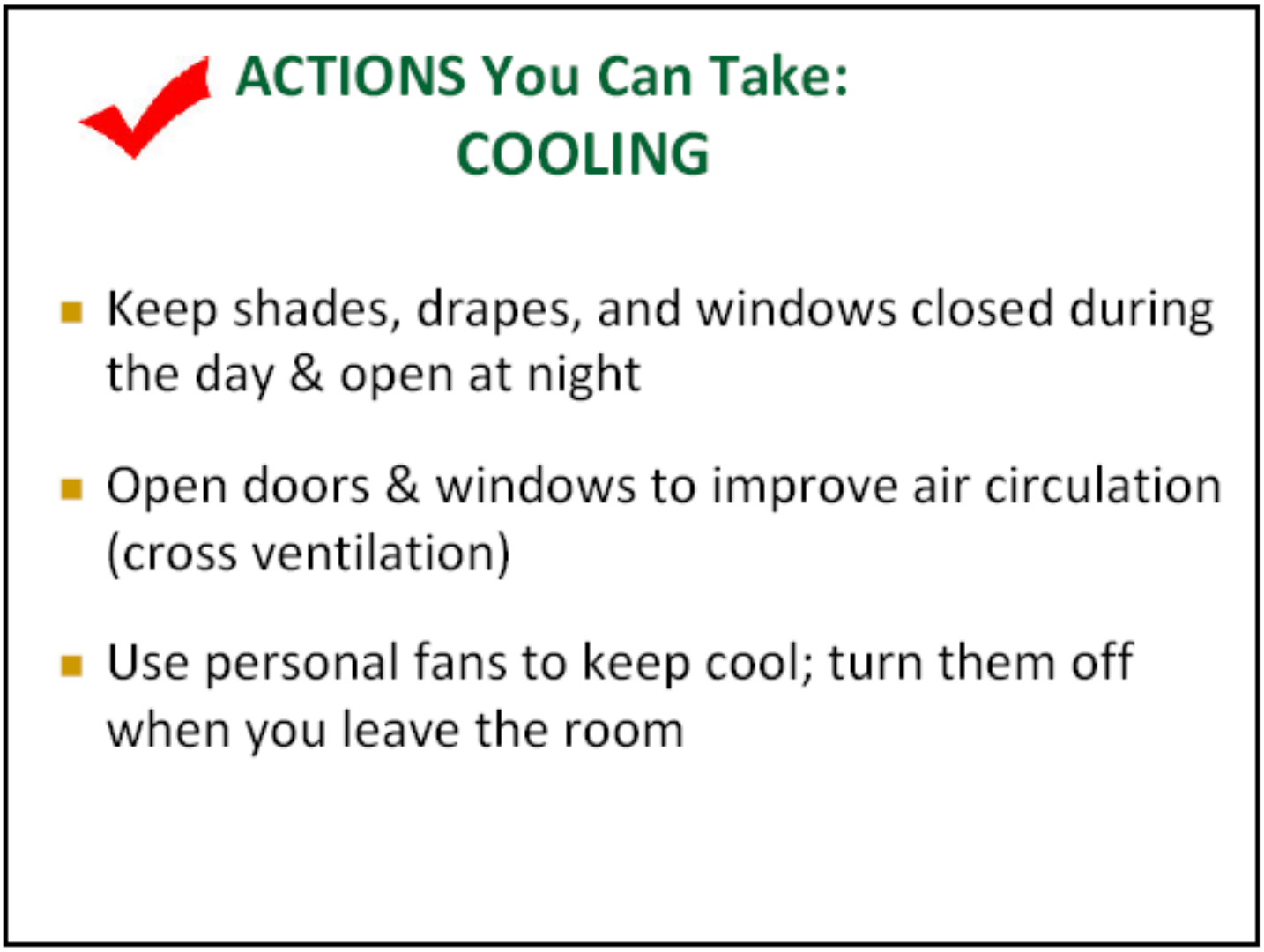
Additional Tips

- Install outlet gaskets and child safety plugs.
- Place draft snakes on window sills or under doors.
- Dress warmer and use blankets.
- Rearrange furniture.
    - Move away from windows, cold walls, and doors.
    - Keep at least 6” from heat registers, returns, and baseboards.
- Open shades and drapes on sunny days (except north-facing windows).
- Use heavy fabrics or layered curtains over windows to keep out drafts.
- Patch holes in walls and cracks in windows.



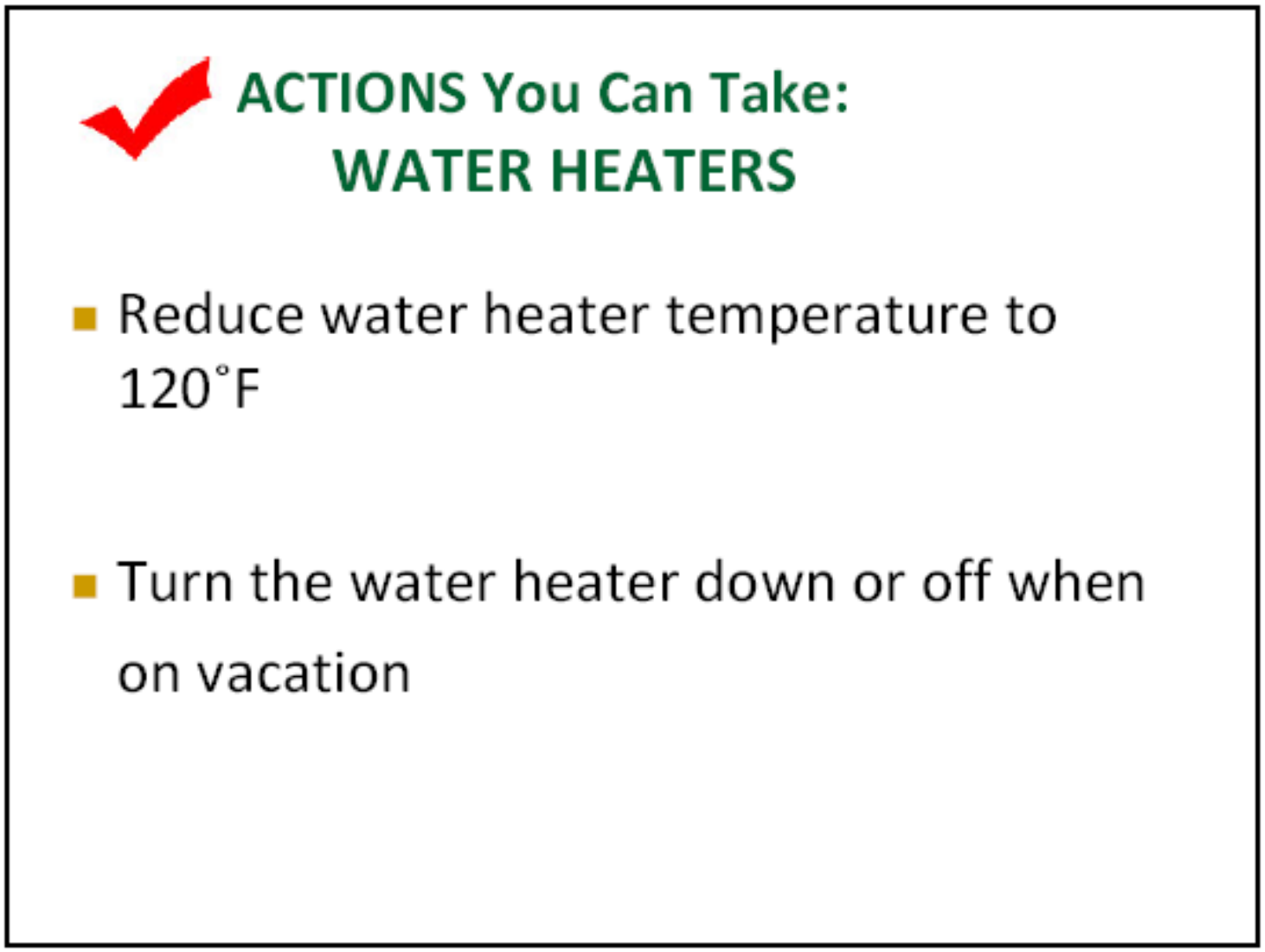
Background Information

- Space heaters are really meant to heat people and not spaces. Turn them off when there is no one in the room.
- Radiant (quartz) heaters are better 'people heaters' & less expensive to operate



Additional Tips

- Dirty filters in air conditioners and furnaces can have a big impact on the efficiency of the unit. The dirt clogs the system making the unit work harder to circulate air. Replace filters at least every three months when these units are in use.
- Schedule heat-producing chores (baking, laundry) for after the hottest part of the day.
- If you use a room air conditioner:
    - Cool a single room, not the whole house
    - Avoid cooling rooms that are not occupied
    - Turn thermostat to highest comfortable level
    - Keep filter clean and seal gaps around unit

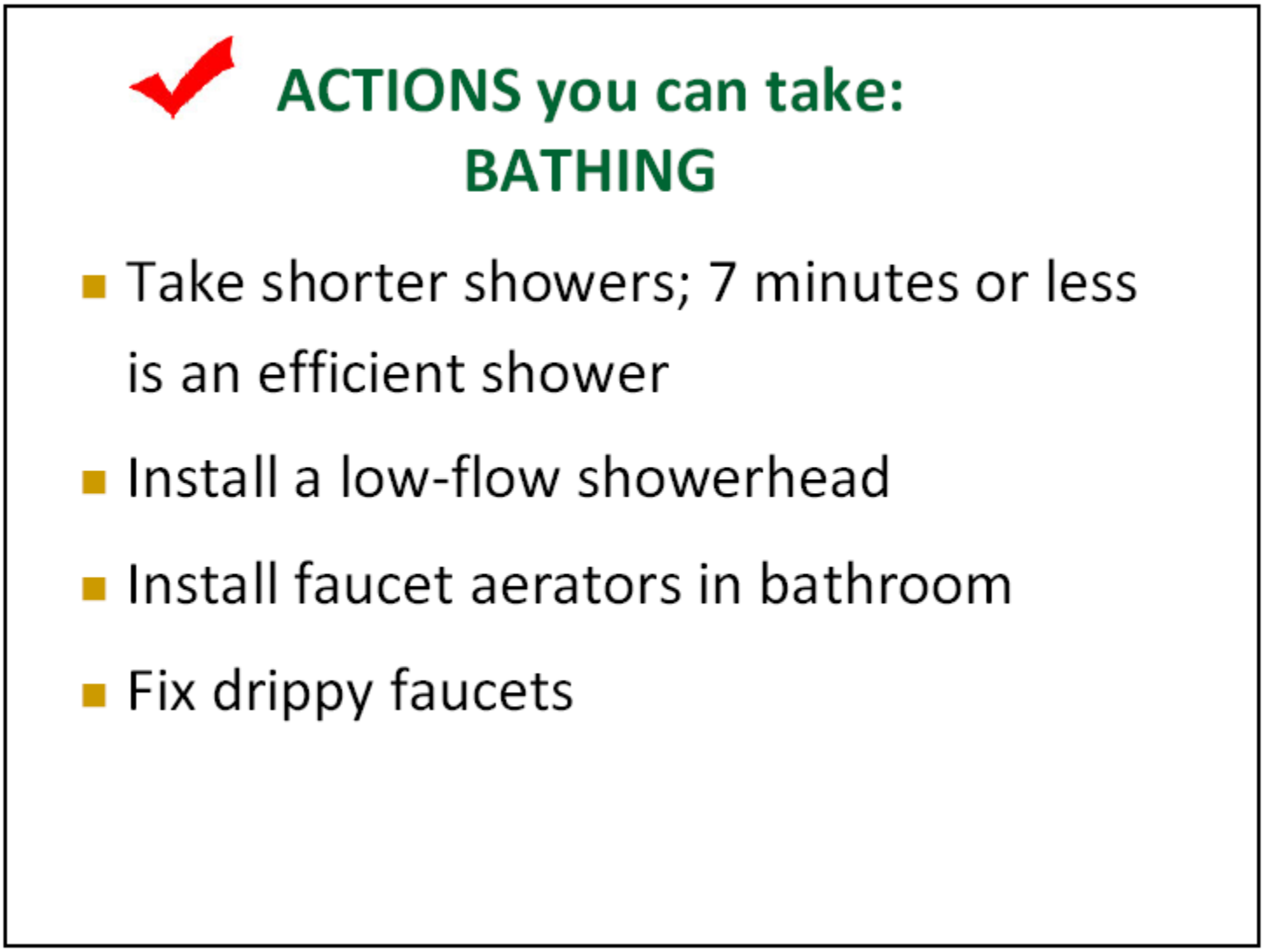


Additional Tips

- If a hot water heater has no temperature gauge, try measuring the temperature at the hot water tap closest to the water heater. Mark the current setting of the water heater with a piece of tape and adjust the water heater until that tap measures 120 degrees.
- You can check the insulation of your water heater by placing your hand CAREFULLY on the outer shell. If it feels hot, then heat is being lost. Consider a water heater wrap to decrease heat loss.

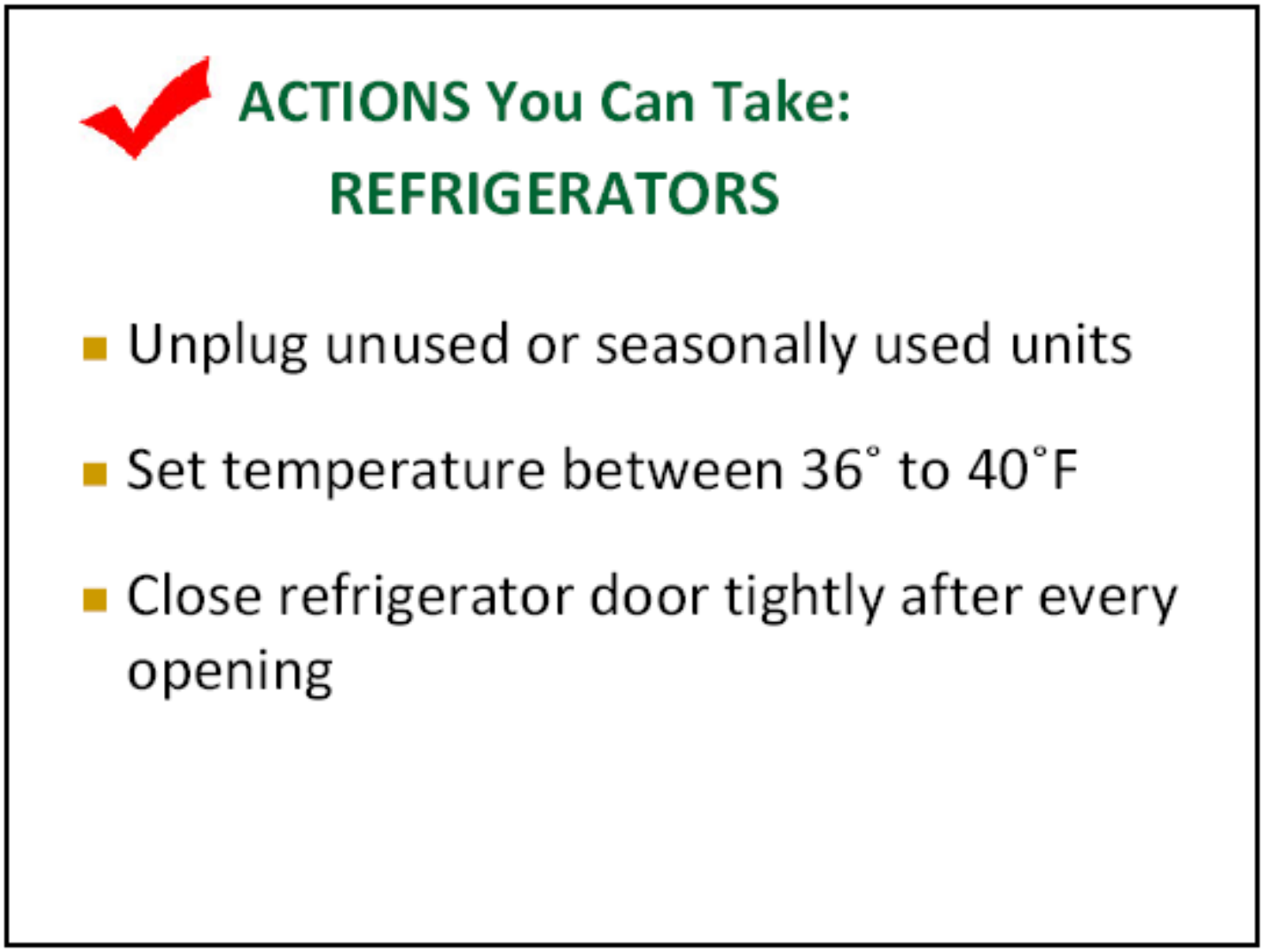
Background Information

- Insulating a water heater depends on the age and location of the heater.
- It's the 2nd largest energy expense in your home
- Can be 15-25% of your utility bill
- The average family uses between 50-80 gallons of hot water each day
- Water heaters work 24 hours a day, every day
- The three biggest users of hot water are:
    - bathing
    - dishwashing
    - laundry
- Energy Star rated water heaters will be available in late 2009.



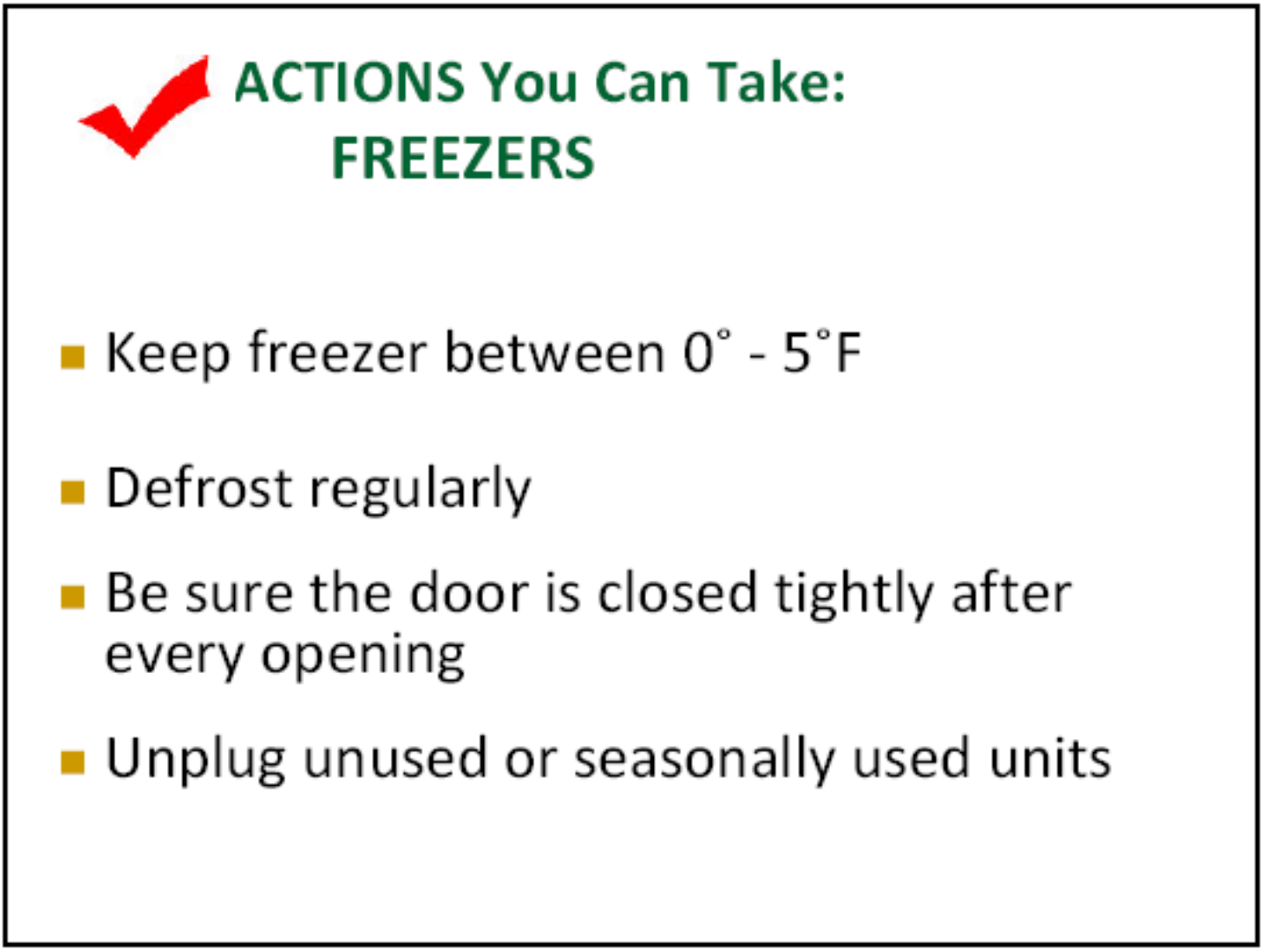
Background Information

- Faucet aerators and efficient showerheads add air to the water stream. This maintains the water pressure while reducing the water flow.
- A 10 minute shower uses 30 to 50 gallons of water
- Using an energy efficient showerhead can use up to 50% less hot water
- Taking a bath can use more hot water than taking a shower



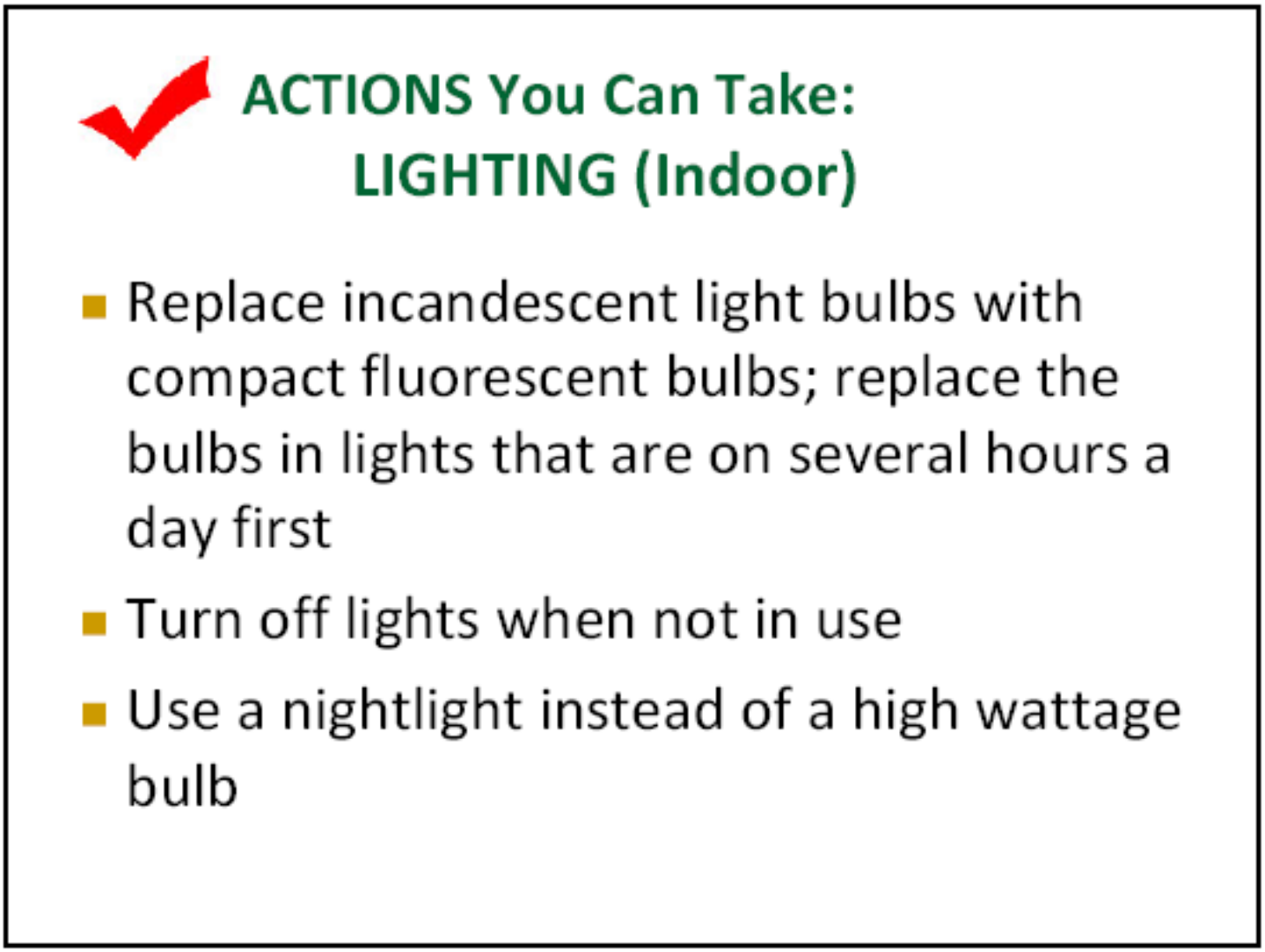
Additional Tips

- Old refrigerators use up to 3 times as much energy as newer models. If you plan on staying in your home for a while it may be cost-effective to replace older refrigerators.
- A full refrigerator is more efficient. When running low on food, fill the refrigerator with jugs of water.
- Keep unit away from sources of heat.
- Check gaskets regularly.
- Clean refrigerator coils.



Additional Tips

- To maintain correct temperature:
  - Keep at least two thirds full
  - Tightly pack items in it



Additional Tips

- When replacing old, incandescent bulbs with CFLs, replace those lights that are used most often first.
- Select lighting to fit the task.
- Use brighter lights for close-up work.
- Use light colored lamp shades.
- Use natural light as often as you can.

Background Information

Incandescent bulbs:

- 90% of the energy used to produce light is turned into heat; Only 10% results in visible light
- Cost less to buy, but are rated to last for only 1000 hours
- Quality of light: Unlike older fluorescent lighting, CFLs are designed to emit light in a similar color range as incandescent bulbs. This warmer color is more appealing. Also, the electronic ballasts used to control CFLs reduce the flicker problems associated with older fluorescents that used magnetic ballasts.
- $ Savings: Between the extended life of a CFL and the lower energy use, replacing one incandescent bulb with a CFL can save you $30 over the life of the bulb.
- Disposal: Fluorescent bulbs contain trace amounts of mercury and should not be thrown in the trash. Many stores such as Home Depot and Bartell's are now accepting used CFL's for disposal. Call your local utility to find additional drop-off points.

Compact Florescent Bulbs:

- Uses 1/4th to 1/3rd the energy of a standard bulb
- May cost more to purchase, but lasts 8 to 10 times longer
- Cost less over the life expectancy of the bulb

LED Lighting:

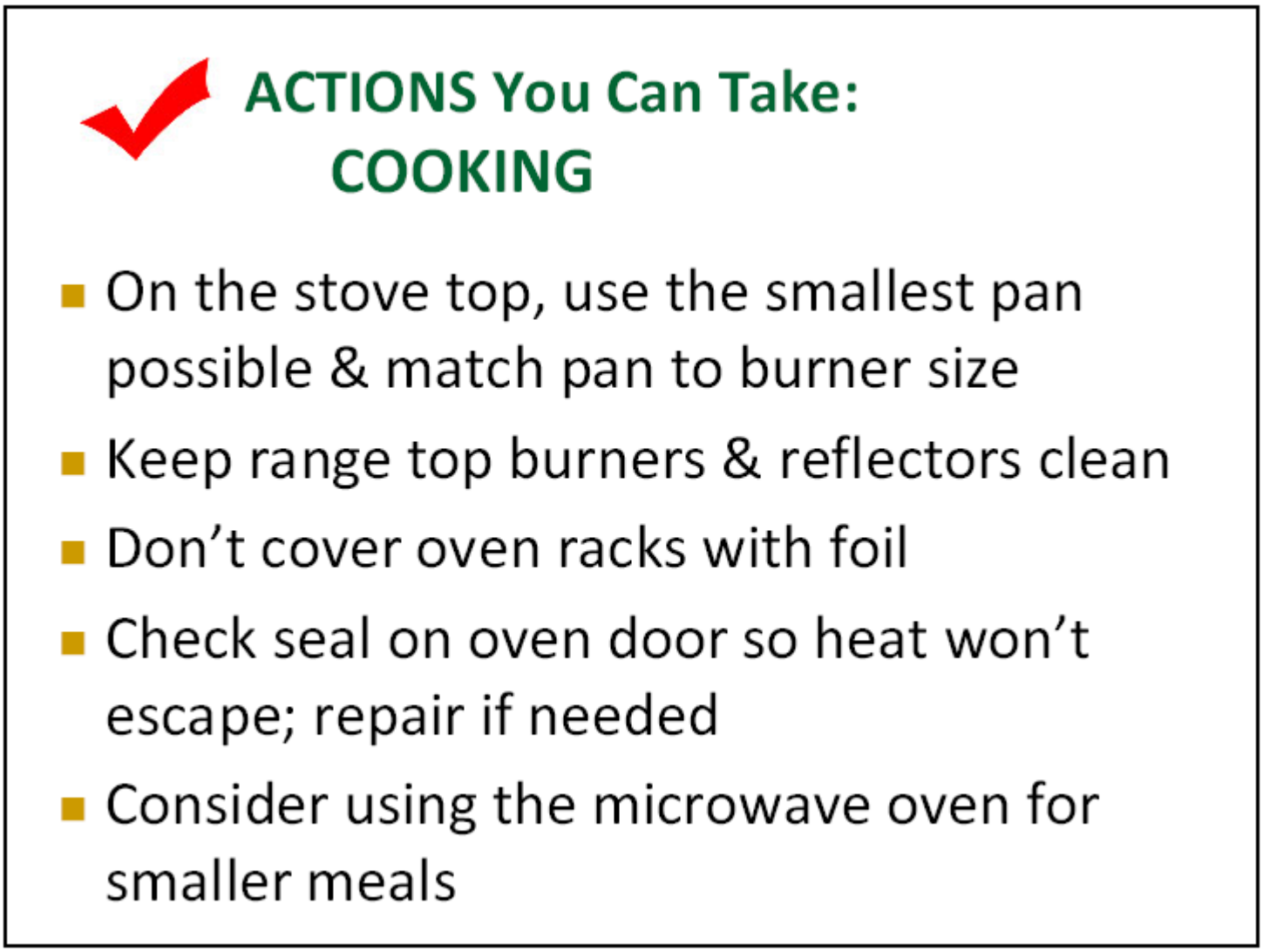
- LED nightlights are available that use only $.03 worth of energy each year. This is a serious energy savings over leaving a light bulb on all night.

ACTIONS You Can Take: LIGHTING (Outdoor)

- Turn off security lights during the day
- Use a dusk-to-dawn timer to reduce use
- Use a motion sensor

Additional Tips

- Make sure your outdoor lights are rated for wet weather. There are CFLs that are designed to be used in areas that may get wet and work very well for outdoor lighting.



Additional Tips

- Use a kitchen vent to reduce the humidity produced during cooking.
- Don't cover oven racks with foil.
- Check seals on oven doors so heat won't escape; repair if needed.

Background Information

- Kitchens use a lot of energy and add significant moisture to a home.
- Microwave ovens can save you money
    - They're more efficient
    - Cook in less time
    - They use 50 to 65% less energy than conventional ovens.
    - *and…* Microwaves do not heat up the kitchen

ACTIONS you can take: DISHWASHING

- Operate the dishwasher only when full and allow dishes to air dry
- When not using a dishwasher, rinse dishes in a pan, not under running water
- Install a faucet aerator in the kitchen
- Fix drippy faucets

Background Information

•An automatic dishwasher uses less hot water than washing dishes by hand

•Most dishwashers function well at 120 degree Fahrenheit

ACTIONS you can take: Clothes Washer

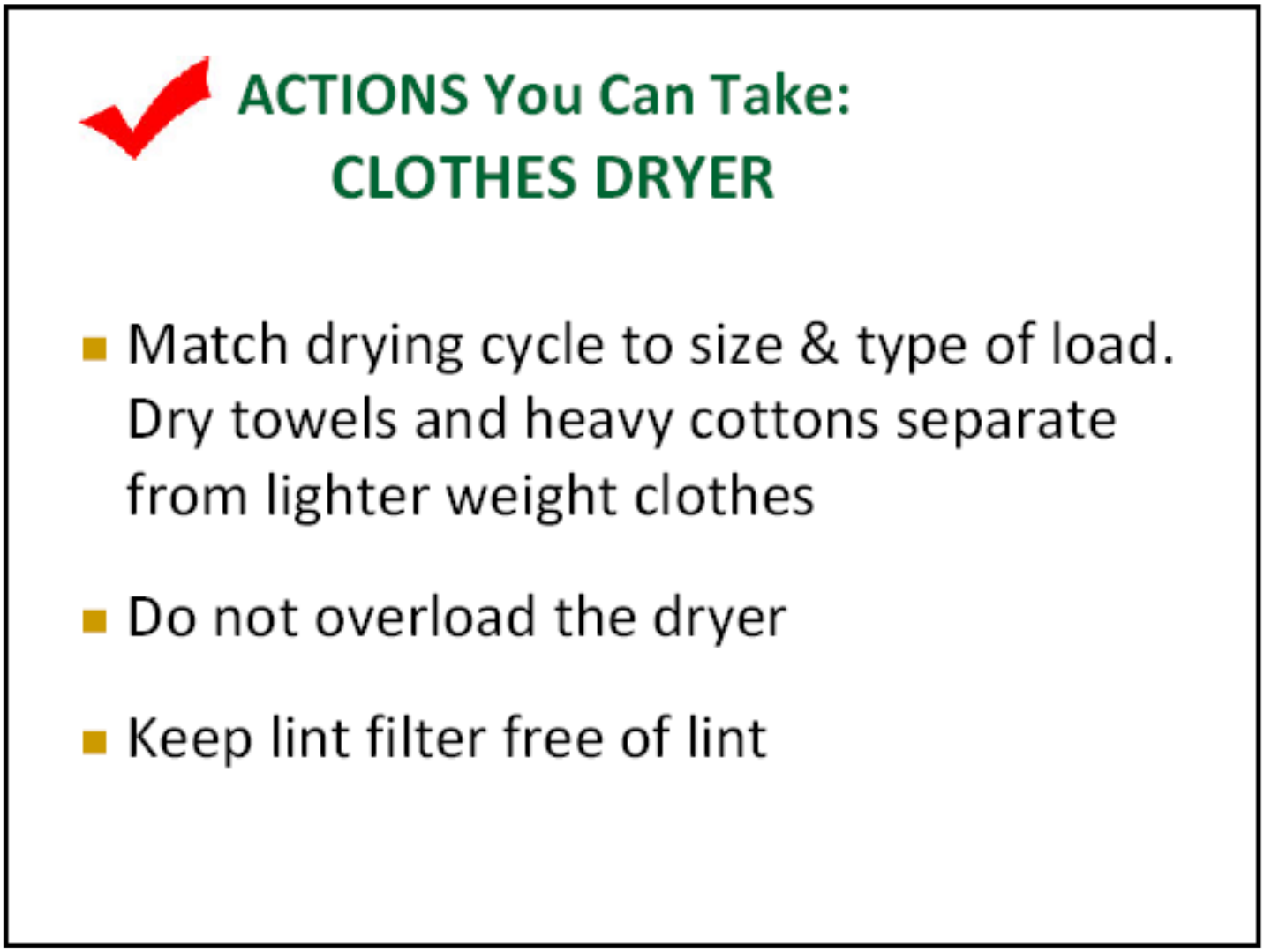
- Wash in cold water; use warm water only for heaviest soiled clothes
- Select water level to match load size
- Double spin clothes. It saves on drying time.

Additional Tips

- Modern laundry soaps are so good that almost all clothes will get clean when washed in cold water. If clothes do not get clean in a cold wash, try using a warm wash rather than the hottest setting.

Background Information

- The biggest cost for washing clothes, 80% to 85%, is for heating water
- Changing temperature setting from hot to warm can cut energy use by one half
- Washing full loads can reduce water waste



Additional Tips

- Dry multiple loads in a row & take advantage of the heat from previous loads
- Avoid over drying. Use auto dry setting if available
- Dry outside whenever you can.

Background Information

- It is very important that dryers vent to the outside. Dryers without an outside vent will add large amounts of heat and moisture to the home.

Other Factors That May Impact Energy Use

What else can impact your utility bill?

- Changes in Dwelling Occupancy or Behavior
  - Long-term guests (lights, laundry, bathing)
  - New babies (laundry)
- Other Specialized Electricity Uses
- Standby (Leaky) Electricity

Specialized Electricity Uses

- Dehumidifiers
- Furnace blower running 100% of time
- Lighting left on 24 hours/day
- Security Lighting
- Multiple refrigerators and freezers
- Malfunctioning equipment

Standby, Leaking Electricity, or Phantom/Idle Load

- Terms for appliances that are "always-on"
- Includes:
  - Home entertainment equipment
  - Home office equipment
  - Kitchen & cleaning appliances
  - Battery-operated power tools
  - And more…

Additional Tips

- If you turn out all of the lights in your home and look around for all of the indicators and clocks that are still on, what you are looking at is your leaky electricity use.
- Putting computers and entertainment systems on power strips allows you to turn off everything at once and know that those energy users are not drawing any more electricity.

Health and Safety

Some Health & Safety Concerns

- Fire Safety
- Carbon Monoxide Safety
- Moisture & Mold
- Electrical Safety
- Compact Fluorescents and Mercury
- Space Heaters
- Lead Paint and Asbestos

Fire Safety

- Create a family emergency plan for actions in case of a fire
- Keep a fire extinguisher near the kitchen
- Smoke detectors
  - Place smoke detectors near or in every sleeping area and have at least one on every floor of your home
  - Change batteries twice yearly
  - Install per manufacturer's instructions

Carbon Monoxide Safety

- Install a carbon monoxide detector on each level of your home, 5-6 feet above the floor
- Do not install detectors within 5 feet of a combustion appliance or door to an attached garage
- Install per manufacturer's instructions

Additional Tips

- Use carbon monoxide detectors if you heat water or your home with gas, propane, or oil; cook with gas or propane; have a fireplace, wood stove, or attached garage

Moisture and Mold

- Use bathroom fans for 30 - 60 minutes after showering or bathing
- Use kitchen fans when cooking, and keep pot lids on
- Opening the blinds and curtains for a little while each day will prevent moisture from collecting

Additional Tips

•Make sure the humidity in your home is no more than 40 – 60%

Background Information

•Hygrometers measure the humidity of a space. They are available as stand alone instruments or as part of weather stations or wall plates. If possible, every home should have equipment to measure temperature and humidity.

Electrical Safety

- Turn off circuit breaker in fuse box before working on wiring
- Make sure all appliances with three-pronged plugs are in grounded outlets
- Do not use electrical appliances in areas with standing water

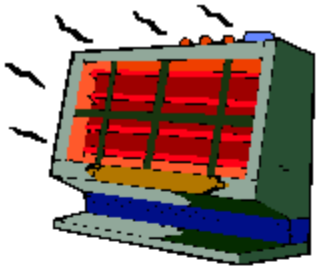
Additional Tips

•Keep an eye out for wiring damage from rodents or wear.

Compact Fluorescent Bulbs and Mercury

- All fluorescent bulbs contain mercury
- Fluorescent bulbs do not release mercury while operating; it is released if a bulb is broken while operating
- Do not dispose of broken or burned out bulbs in household garbage; contact the local toxic disposal program for disposal information

Space Heater Safety



- Place heater at least 3 feet from furniture, drapes, and other objects
- Keep children away from heaters
- Turn off and unplug when not in room or when sleeping
- Read and follow all instructions

Additional Tips

•Never use unvented combustion space heaters for indoor use (kerosene, propane, oil, or gas)

Lead Paint and Asbestos

- In homes built before 1978, check paint for lead content before undertaking renovation, repair, or painting projects
  - Testing kits are available at hardware stores; local laboratories can also examine samples
  - If you find lead, do not disturb it; contact a certified lead-based paint risk assessor firm if you need to work in the area.
- Check for asbestos insulation around pipes and in attics before working in these areas
  - If you find asbestos do not disturb it; contact a certified asbestos abatement firm if you need to work in the area

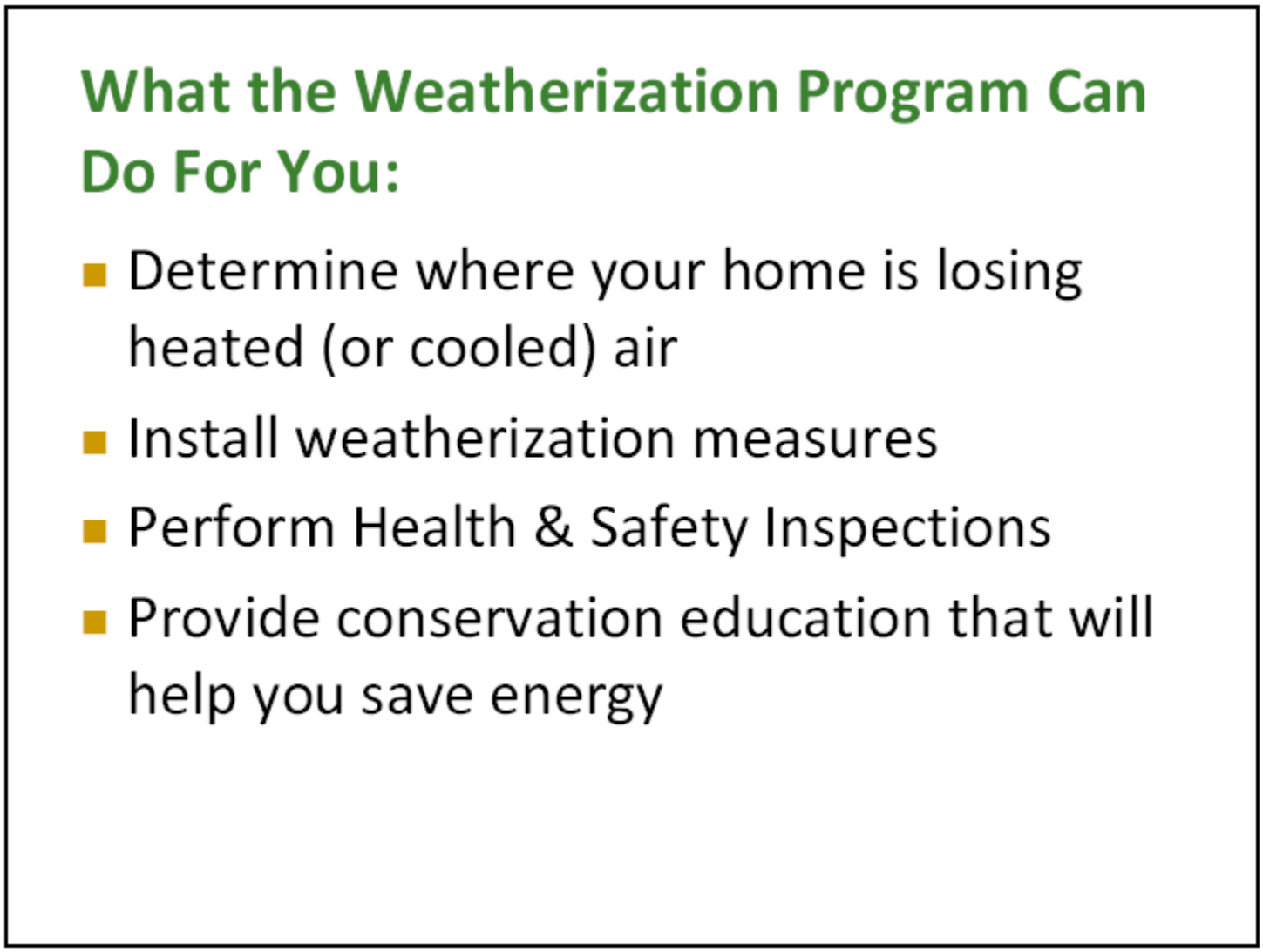
Weatherization

Do you find yourself asking these questions?

- Why is my house always too warm or too cold?
- Where are the drafts coming from?
- Why are my utility bills so big?

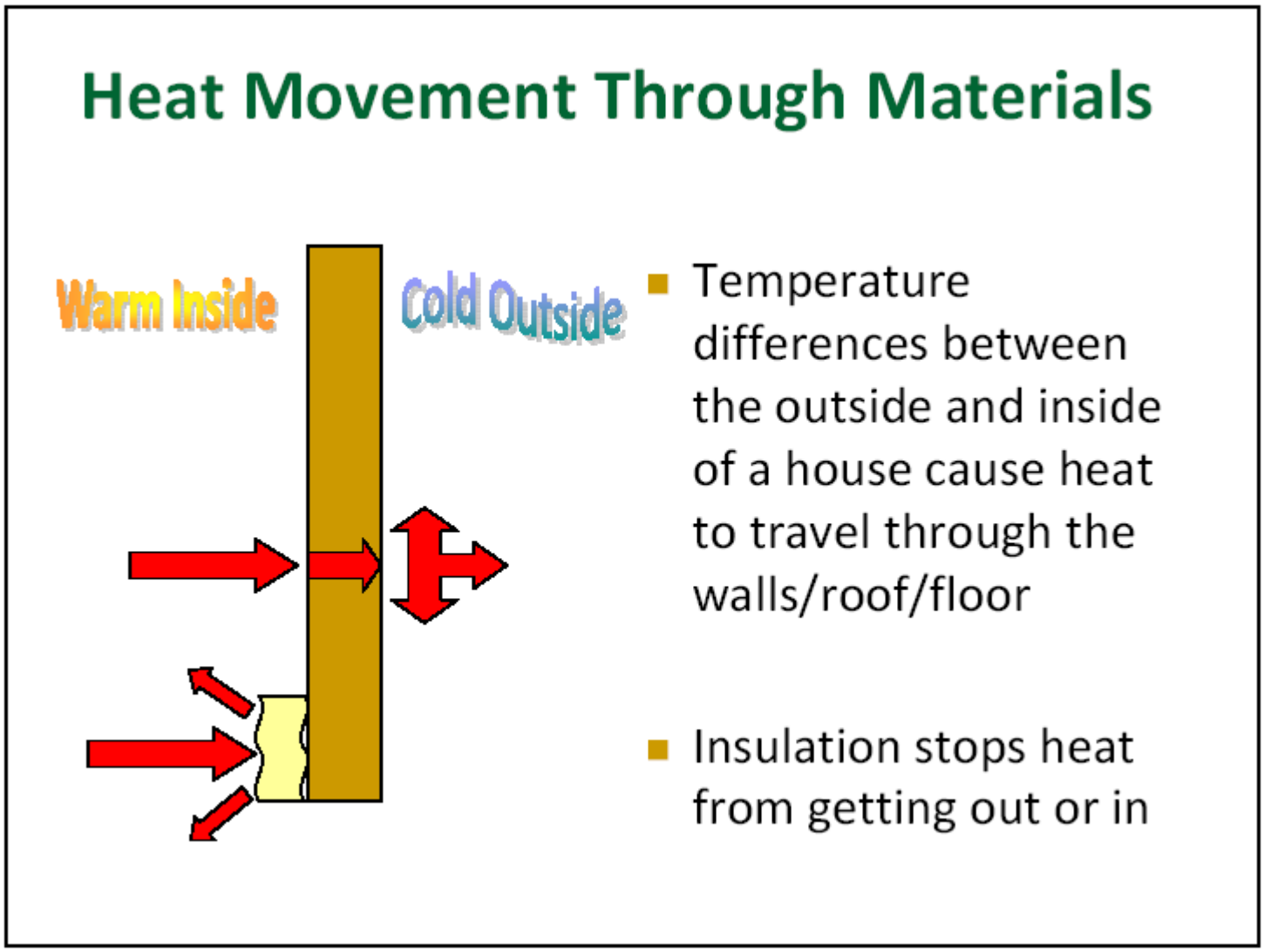
Many of these problems can be due to heat leaking into and out of your home through drafts and not enough insulation.

The best way to deal with these problems is through *weatherization*!!



Additional Tips

- To learn more about weatherization and participate in a program, contact your local community action agency for program information or referral to a local weatherization services provider.



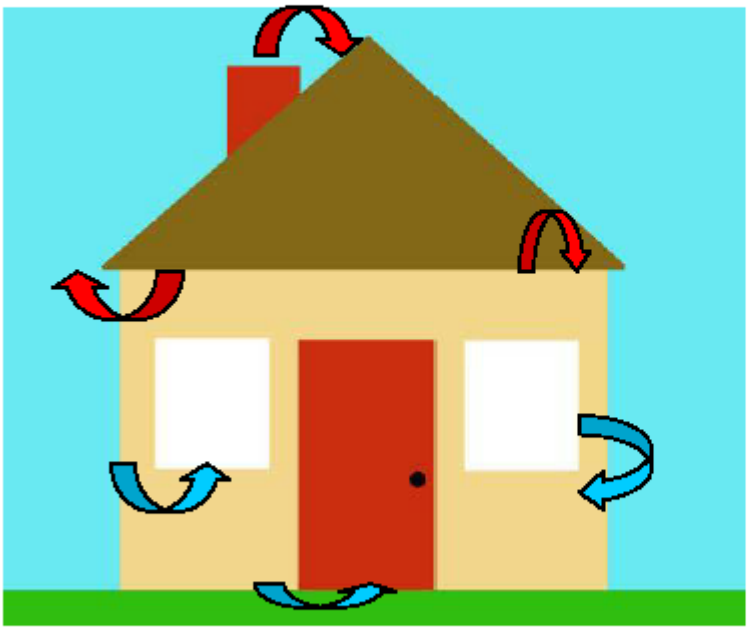
Background Information

There are three types of heat loss that can occur in a home.

- Convection = Movement of fluids, in the case of homes this means air, due to temperature differences. This is the cause of heat loss due to warm air rising and leaving the house.
- Conduction = Movement of heat through solids. When you step on a cold floor, the heat lost through your feet is due to conduction.
- Radiation = Flow of heat between surfaces of different temperature. The warmth of the sun is due to radiative heating. Radiant heat sources can keep us warm even when the air temperature is cool. Large cold objects can also make us feel cold because our heat radiates to them.

Air sealing prevents convective heat loss, while insulation can help with convective heat loss, conductive heat loss and heat loss through radiation by maintaining interior surfaces at a warmer temperature.

Losing Heated or Cooled Air Through Air Infiltration



Air movement in a home is natural.

When you heat your home the hot air rises and escapes

- Finds cracks and holes near the ceiling and in the attic

Cool air is heavier and enters your house

- Finds cracks and holes near the floor and around the windows

Background Information

- Air leakage in a home is reduced through air sealing techniques.
- When a home is "tight", meaning it has little natural air exchange with the outdoors, air quality problems can occur. This can be addressed through whole house ventilation systems.

Weatherization Mission

- Reduce household energy costs, particularly for the elderly, people with disabilities, and children, while ensuring occupant health and safety.
- Reduce household carbon footprint.

Why Weatherization?

- Families often choose between heat and other necessities
- Reduces energy costs all year round

Additional Tips

•Storage in the attic should be in a small area on boards.

•Try not to walk on insulation.

Working With Utilities

Your Utility Bill

What determines how much your monthly bill will be?

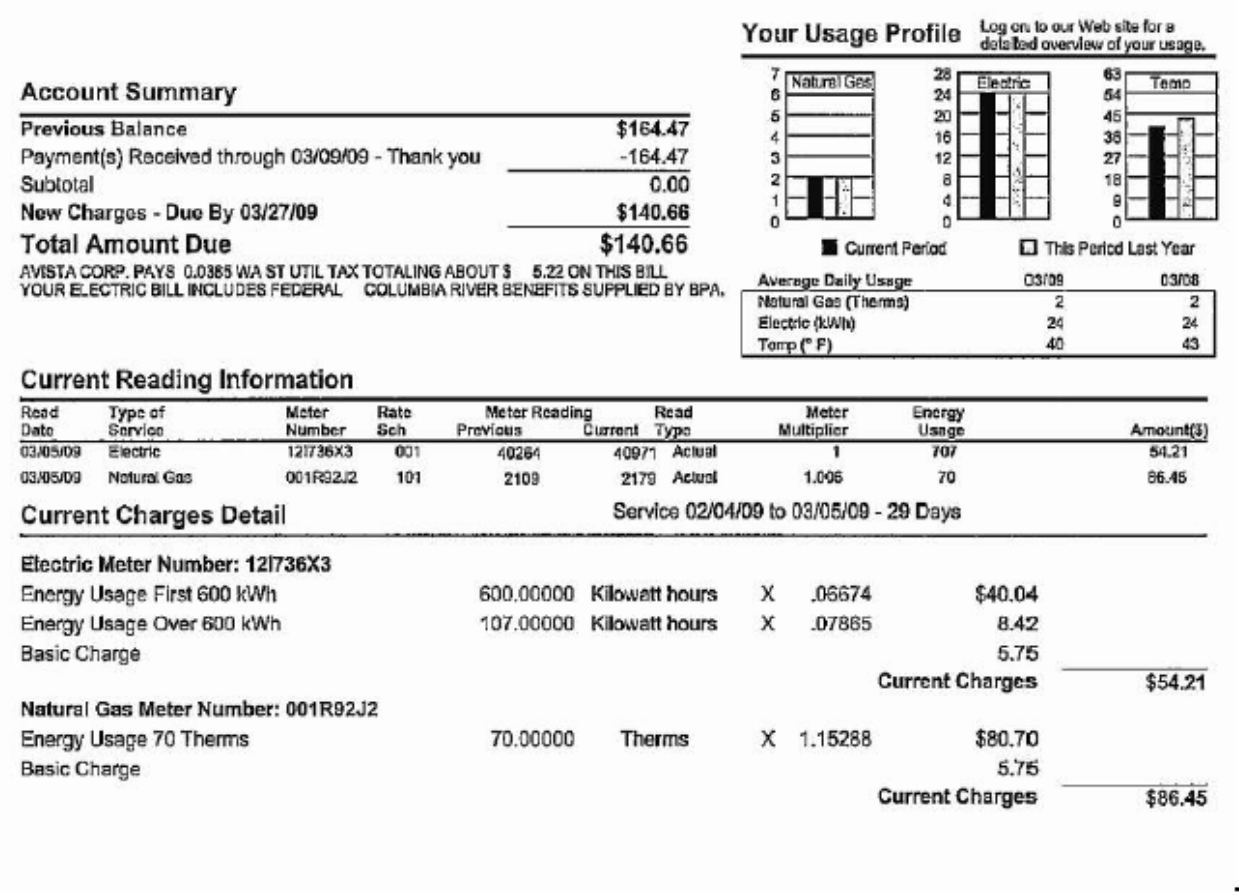
- **Things you don't control**
  - Utility Rates (about .07/kWh)
  - Season, Climate & Temperature

- **Things <u>YOU CAN makes choices</u> about**
  - How much energy you use
    - Heating & Cooling
    - Water
    - Lighting
    - Other appliances
  - How well your heating & cooling system is working

Information on Your Utility Bill

- Electricity rates ($/kWh)
- Gas rates ($/therm)
- Past usage
- Meter readings
- Service charges

Sample Energy Bill



Account Summary

Previous Balance	$164.47
Payment(s) Received through 03/09/09 - Thank you	-164.47
Subtotal	0.00
New Charges - Due By 03/27/09	$140.66
Total Amount Due	**$140.66**

AVISTA CORP. PAYS 0.0385 WA ST UTIL TAX TOTALING ABOUT $ 5.22 ON THIS BILL
YOUR ELECTRIC BILL INCLUDES FEDERAL COLUMBIA RIVER BENEFITS SUPPLIED BY BPA.

Your Usage Profile Log on to our Web site for a detailed overview of your usage.

Natural Gas | Electric | Temp

■ Current Period ☐ This Period Last Year

Average Daily Usage	03/09	03/08
Natural Gas (Therms)	2	2
Electric (kWh)	24	24
Temp (° F)	40	43

Current Reading Information

Read Date	Type of Service	Meter Number	Rate Sch	Meter Reading Previous	Current	Read Type	Meter Multiplier	Energy Usage	Amount($)
03/05/09	Electric	12I736X3	001	40264	40971	Actual	1	707	54.21
03/05/09	Natural Gas	001R92J2	101	2109	2179	Actual	1.000	70	86.45

Current Charges Detail Service 02/04/09 to 03/05/09 - 29 Days

Electric Meter Number: 12I736X3

Energy Usage First 600 kWh	600.00000	Kilowatt hours	X	.06674	$40.04
Energy Usage Over 600 kWh	107.00000	Kilowatt hours	X	.07865	8.42
Basic Charge					5.75
				Current Charges	$54.21

Natural Gas Meter Number: 001R92J2

Energy Usage 70 Therms	70.00000	Therms	X	1.15288	$80.70
Basic Charge					5.75
				Current Charges	$86.45

Background Information

- This is a sample bill from Avista Utilities. Most energy utilities use a similar format – providing much of the same information.
- This information is listed clearly on the bill.
  - Electricity use is measured in kilowatt hours. This is a unit of energy equivalent to running a 100 Watt light bulb for 10 hours. Electricity rates are often "tiered". The first block of energy you use (in this case the first 600 kWh) has a lower rate than the next block. This is to encourage consumers to keep energy use low. Some utilities also change rates based on the time of day. Higher rates during the hours when more people are using electricity reflect the increased cost the utility incurs trying to meet this need, and encourages customers to adjust high energy use activities to other times of day. This means setting dishwashers and clothes washers and dryers to run in the middle of the night, shifting shower times, etc.
  - Gas rates – Can also be tiered. Gas use is measured in therms which is also a unit of energy.
  - Most utility bills include information about the amount of energy used by the consumer in the same time period during the previous year, and sometimes provide a graph showing energy use over the entire previous year. This information can help pinpoint large changes in energy use that may be due to new appliances, a new person in the home, or an unknown energy user or meter error.
  - Meter readings – Most meter readings are actual readings of the meter, but in some cases the utility will use an estimate to determine the bill. This estimate is based on past energy usage and the temperature profile of the billing period.
  - Service charges – In addition to paying for the number of kWhs and/or therms of energy used, the customer pays service charges to the utility that account for transmission of the electricity and account maintenance. The service charges are generally detailed somewhere on the bill or the utility's website

Additional Information From Your Utility

- Conservation and efficiency incentives
- Energy saving tips
- Billing assistance options
- Estimate of baseload vs. seasonal energy use

Background Information

- Baseload energy use refers to the amount of energy a consumer uses that is not directly tied to heating and cooling of the home.
- These additional services are often spelled out on the utility's website, or can be obtained by calling the utility.

Utility Incentives

- Conservation kits
- Rebates on efficient appliances
- Rebates on the installation of new heating/cooling equipment and insulation
- Referrals for contractors

Energy Saving Tips

- Information on website
- Energy Advisors available by phone

Additional Tips

•These incentives are samples of what may be available from local utilities. Incentives will vary.

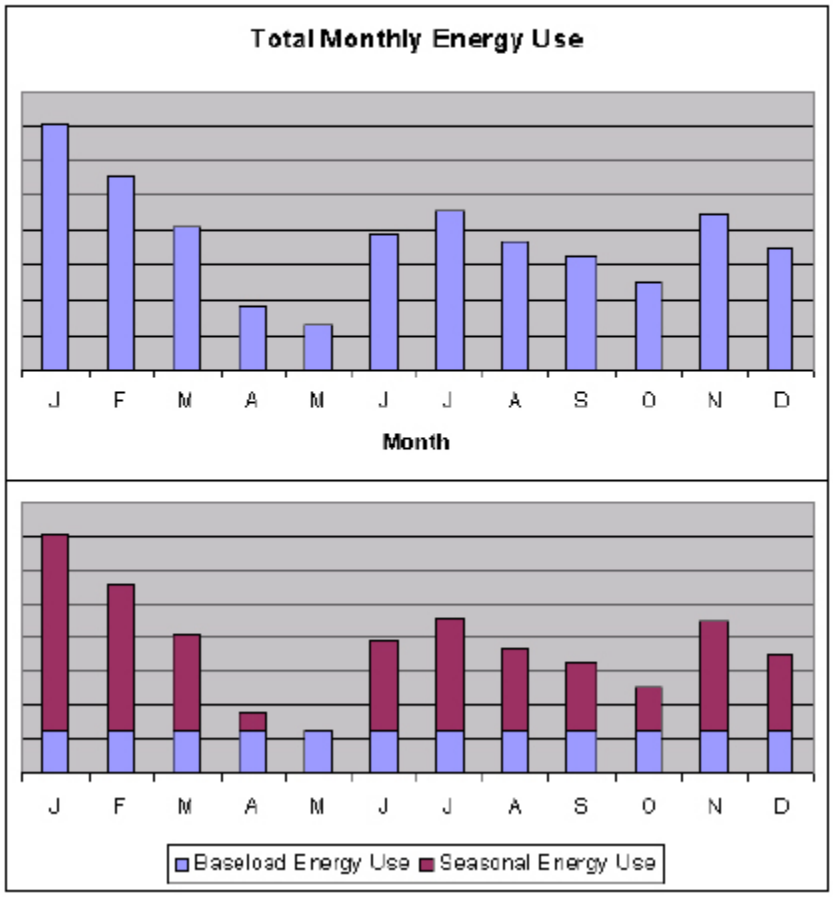
Billing Assistance

- If bill paying is an issue, call the utility BEFORE the bill is due to work out a payment plan
- Budget Billing
- Energy Assistance
  - Referral to local energy assistance programs

Background Information

- Budget Billing – Most utilities can provide an option that splits the total annual energy bill evenly over the billing periods. The amount is based on past usage data and at the end of the year any overcharge or under charge is taken care of.
- Energy assistance – Assistance with energy bills is available through the Low Income Home Energy Assistance Program (LIHEAP). Other assistance programs may be available through the local utility.
- For referral to the local LIHEAP program, contact the local weatherization provider, utility company, or social service referral agencies.

Estimating Seasonal Energy Use



Background Information

- A rough estimate of seasonal energy use tied to heating and cooling can be calculated by subtracting the energy use from a month with little or no heating and cooling needs from the rest of the months. The remaining energy use is called the baseload energy use.
- This home uses quite a bit of energy for heating in the winter and cooling in the summer, and could definitely benefit from some weatherization.
- Baseload energy use vs. heating and cooling loads
    - Baseload energy = energy use during months with no heating or cooling needs (May, September)
    - Heating load = Energy use in a month requiring heat – baseload (Energy use in December – Energy use in May)
    - Cooling load = Energy use in a month requiring cooling – baseload (Energy use in August – Energy use in May)

Why Use Less Energy?

Why use less energy?

- **Conservation & efficiency can save you money**

- **It's good for the environment**
  - The USA has less then 5% of the world's population
  - But, we use 25% of the world's energy
  - By using less energy, we:
    - Use less of the planet's resources
    - Reduce our Carbon Footprint

How can I make a difference?

My Action Plan

Three things I can do to reduce my energy consumption today…

- 1.
- 2.
- 3.

Background Information

The action plan consists of action items chosen by the consumer that are specific things they can and will do to improve their comfort, save energy, and save money. Encourage consumer to write their action plan in their own words and place somewhere in their home as an easy reminder (for example, on the refrigerator or next to the thermostat).

Resources

Tips for Reducing Your Energy Bill
(Sample Expanded Tips Handout)

Washington State Department of Commerce

Tips for Reducing Your Energy Bill

2009

Department of Commerce
Innovation is in our nature.

ACTIONS You Can Take: THERMOSTATS

- Set thermostat between 65 & 68 degrees in the daytime
- Set back to 60 at night and when you leave the house for extended periods of time

Did you know?

Turning the thermostat higher will not heat your house faster.

ACTIONS You Can Take: HEATING

- Use rope caulk , door sweeps, and weather stripping to prevent heat loss
- Install interior storms or plastic on windows
- Check furnace filter once a month during the heating season; Clean and replace the filter as needed

ACTIONS You Can Take: SPACE HEATERS

- Turn off and unplug heaters when they are not in use or when you are sleeping
- Set on the lowest thermostat setting
- Direct heater to heat people, not space
- Clean reflectors, coils, & fins

ACTIONS You Can Take: COOLING

- Keep shades, drapes, and windows closed during the day & open at night
- Open doors & windows to improve air circulation (cross ventilation)
- Use personal fans to keep cool; turn them off when you leave the room

ACTIONS You Can Take: WATER HEATERS

- Reduce water heater temperature to 120˚F
- Turn the water heater down or off when on vacation

ACTIONS you can take: BATHING

- Take shorter showers; 7 minutes or less is an efficient shower
- Install a low-flow showerhead
- Install faucet aerators in bathroom
- Fix drippy faucets

ACTIONS You Can Take:
REFRIGERATORS

- Unplug unused or seasonally used units
- Set temperature between 36˚ to 40˚F
- Close refrigerator door tightly after every opening

ACTIONS You Can Take: FREEZERS

- Keep freezer between 0˚ - 5˚F
- Defrost regularly
- Be sure the door is closed tightly after every opening
- Unplug unused or seasonally used units

ACTIONS You Can Take: LIGHTING (Indoor)

- Replace incandescent light bulbs with compact fluorescent bulbs; replace the bulbs in lights that are on several hours a day first
- Turn off lights when not in use
- Use a nightlight instead of a high wattage bulb

ACTIONS You Can Take: LIGHTING (Outdoor)

- Turn off security lights during the day
- Use a dusk-to-dawn timer to reduce use
- Use a motion sensor

ACTIONS You Can Take: COOKING

- On the stove top, use the smallest pan possible & match pan to burner size
- Keep range top burners & reflectors clean
- Consider using the microwave oven for smaller meals

ACTIONS you can take: Clothes Washer

- Wash in cold water; use warm water only for heaviest soiled clothes
- Select water level to match load size
- Double spin clothes. It saves on drying time.

ACTIONS you can take: DISHWASHING

- Operate the dishwasher only when full and allow dishes to air dry
- When not using a dishwasher, rinse dishes in a pan, not under running water
- Install a faucet aerator in the kitchen
- Fix drippy faucets

ACTIONS You Can Take: CLOTHES DRYER

- Match drying cycle to size & type of load. Dry towels and heavy cottons separate from lighter weight clothes
- Do not overload the dryer
- Keep lint filter free of lint

Three things I can do to reduce my energy consumption today…

- 1.
- 2.
- 3.

10 Actions You Can Take to Reduce Your Energy Bill

(Sample Expanded Tips Handout)

Washington State Department of Commerce

10 Actions You Can Take to Reduce Your Energy Bill

2009

Department of Commerce
Innovation is in our nature.

1. **Control Your Thermostat** 

- Set thermostat between 65 and 68 degrees in the daytime.
- Set back to 60 degrees at night and when you leave the house for extended period of time.

2. **Reduce Drafts and Air Leaks** 

- Install rope caulk, door sweeps, and weatherstripping.
- Install interior storms or plastic on windows.

3. Cooling Your Home

- Set air conditioner thermostat at 78 degrees (or as high as comfortable) when you are home; higher when you leave the house for extended period of time.
- Keep shades, drapes, and windows closed during the day; open doors and windows for cross ventilation when outside air cools.

4. **Set Water Heater to 120 Degrees** ✔

- Turn down or off when on vacation.

5. **Control the Flow of Your Water** ✔

- Install low-flow showerheads and sink aerators.
- Fix any leaky faucets, toilets, or water pipes.

6. Refrigerators and Freezers

- Set refrigerator temperature between 36 and 40 degrees.
- Set freezer between 0 and 5 degrees; defrost when needed.
- Unplug unused or seasonally used units.

7. Lighting

- Turn off indoor and outdoor lights when not in use.
- Replace incandescent light bulbs with compact fluorescent bulbs; especially lights that are on several hours per day.
- Use a nightlight instead of a high-wattage bulb.

8. In the Kitchen ✔

- Keep range-top burners and reflectors clean.
- Consider using microwave oven for small meals.
- Use dishwasher only when full and allow dishes to air dry.

9. Laundry ✔

- Wash laundry with cold water.
- Select water level to match load size.
- Match drying cycle to size and type of load.
- Keep lint filter free of lint.

10. Fill out and follow your energy action plan.

My family will take the following steps to save energy in our home:

1. _____

2. _____

3. _____

Health and Safety
(Sample Quick Tips Handout)

Washington State Department of Commerce

Health and Safety Tips

2009

Department of Commerce
Innovation is in our nature.

1. Fire Safety

- Install smoke detectors near or in every sleeping area; have at least one on every floor.
- Install per manufacturer instructions.
- Replace batteries twice a year.
- Keep a fire extinguisher near the kitchen.

2. Carbon Monoxide Safety

- Install a carbon monoxide detector on each floor of your home, 5-6 feet above the floor.
- Install per manufacturer instructions.

3. Moisture and Mold

- Use bathroom fans for 30-60 minutes after showering or bathing.
- Use kitchen fans when cooking and keep pot lids on.

4. Electrical Safety

- Turn off circuit breaker in fuse box before working on wiring.
- Do not use electrical appliances in areas with standing water.

5. Compact Fluorescent Bulbs and Mercury

- All fluorescent bulbs contain mercury; mercury is only released if a bulb is broken while operating.
- Do not dispose of broken or burned out bulbs in household garbage; contact local toxic disposal program for disposal information.

6. Space Heater Safety

- Place heater at least 3 feet from furniture, drapes, and other objects.
- Keep children away from heaters.
- Turn off and unplug when not in room or when sleeping.
- Read and follow all instructions.

7. Lead Paint

- Check paint for lead in homes built before 1978 before renovating, repairing, or painting.
- Test kits are available at hardware stores.
- If you find lead, do not disturb it; contact a certified lead-based paint risk assessor if you need to work in the area.

8. Asbestos

- Check for asbestos insulation around pipes and in attics before working in these areas.
- If you find asbestos, do not disturb it; contact a certified asbestos abatement firm if you need to work in the area.

Washington State Local Weatherization Agencies

WASHINGTON STATE
LOCAL WEATHERIZATION AGENCIES AND SERVICE AREA

Benton-Franklin Community Action Committee
720 West Court Street
Pasco, Washington 99301-4178
509/545-4042 - FAX 509/545-1449
(Benton and Franklin Counties)

Blue Mountain Action Council
342 Catherine Street
Walla Walla, Washington 99362-3057
509/529-4980 - FAX 509/529-4985
(Columbia, Garfield, & Walla Walla Counties)

Chelan-Douglas Community Action Council
620 Lewis Street
Wenatchee, Washington 98801-3435
509/662-6156 - FAX 509/662-1737
(Chelan and Douglas Counties)

City of Seattle
Office of Housing – HomeWise Program
Box 94725
Seattle, Washington 98124-4725
206/684-0354 - FAX 206/233-7119
(City of Seattle only)
Physical Street Address: 700 Fifth Avenue, Suite 5700

Clark County Department of Community Services
PO Box 5000
Vancouver, Washington 98666-5000
360/397- 2075 - FAX 360/397-6033
(Clark County)
Physical Street Address:
1601 East Fourth Plain Blvd, Bldg 17, Suite C214, 98661

Coastal Community Action Program
117 East Third
Aberdeen, Washington 98520-0304
360/533-5100 - FAX 360/532-4623
(Grays Harbor and Pacific Counties)

Community Action Center of Whitman County
350 SE Fairmont Road
Pullman, Washington 99163-5500
509/334-9147 - FAX 509/334-9105
(Whitman County)

Community Action Council
of Lewis, Mason, and Thurston Counties
420 Golf Club Road SE #100
Lacey, Washington 98503
360/438-1100 - FAX 360/491-7729
(Lewis, Mason, and Thurston Counties)

Community Action Partnership
124 New 6th Street
Lewiston, Idaho 83501
208/746-3351 ext 230 - FAX 208/746-5456
(Asotin County)

HopeSource
PO Box 680
Ellensburg, Washington 98926
509/962-0429 - FAX 509/925-1204
(Kittitas County)
Physical Street Address: 601 West 5th Avenue

Housing Authority of Skagit County
1650 Port Drive
Burlington, Washington 98233
360/856-1223 - FAX 360/424-6005
(Skagit County)

King County Housing Authority
5200 Southcenter Blvd, Suite 280
Tukwila, Washington 98188-3326
206/214-1250 - FAX 206/357-2446
(All of King County except City of Seattle)

Kitsap Community Resources
1201 Park Avenue
Bremerton, Washington 98337-1760
360/473-2027- FAX 360/792-8708
(Kitsap County)

Lower Columbia Community Action Council
1526 Commerce Avenue
Longview, Washington 98632-0173
360/425-3430 - FAX 360/425-6657
(Cowlitz and Wahkiakum Counties)

Metropolitan Development Council
721 Fawcett Avenue South, Suite # 201
Tacoma, Washington 98402-5503
253/593-2336 - FAX 253/597-6700
(City of Tacoma only)

North Columbia Community Action Council
903 West Third Ave
Moses Lake, Washington 98837-0114
509/765-9243 - FAX 509/764-0346
(Adams, Grant, and Lincoln Counties)

Okanogan County Community Action Council
PO Box 1067
Okanogan, Washington 98840-1067
509/422-4041 - FAX 509/826-7339
(Okanogan County)
Physical Street Address: 424 South Second Avenue

Olympic Community Action Programs
228 West First Street, Suite J
Port Angeles, Washington 98362
360/452-4726 - FAX 360/457-4331
(Clallam and Jefferson Counties)

Opportunities Industrialization Center of Washington
815 Fruitvale Boulevard
Yakima, Washington 98902-1467
509/452-2235 - FAX 509/452-2826
(All of Yakima County North of Union Gap)
Physical Street Address for Chris Link: 1419 Hathaway

Pierce County Community Action Programs
3602 Pacific Avenue, Suite 200
Tacoma, Washington 98418-7920
253/798-3835 - FAX 253/798-2817
(All of Pierce County except City of Tacoma)

Rural Resources Community Action
956 South Main, Suite A
Colville, Washington 99114
509/684-8421 - FAX 509/684-4740
(Ferry, Pend Oreille, and Stevens Counties)

Snohomish County Human Services Dept.
3000 Rockefeller Avenue – MS 305
Everett, Washington 98201-3511
425/388-7202 - FAX 425/388-7311
(Snohomish County)

Spokane Neighborhood Action Partners
212 West Second Avenue
Spokane, Washington 99201-3606
509/744-3370 - FAX 509/744-3374
(Spokane County)

The Opportunity Council
1322 N. State Street
Bellingham, Washington 98225
360/733-6559 - FAX 360/671-0541
(Island, San Juan, and Whatcom Counties)

Washington Gorge Action Programs
1250 East Steuben
Bingen, Washington 98605
509/493-2662 - FAX 509/493-4430
(Klickitat and Skamania Counties)

Yakima Valley Farm Workers Clinic
(Northwest Community Action Center)
PO Box 831
Toppenish, Washington 98948-0831
509/865-7630 - FAX 509/865-5116
(All of Yakima County South of Union Gap)
Physical Street Address: 706 Rentschler Lane

Washington's Gas and Electric Utility Providers

Washington's Electric and Gas Utility Providers

Electric Utilities
(x) - Natural Gas also provided

Alder Mutual Light Co, Inc
P O Box 841
Elbe, WA 98330

Avista Corporation (WA) (x)
P O Box 3727
Spokane, WA 99220-3727
http://www.avistautilities.com/

Benton Rural Electric Assn
P O Box 1150
Prosser, WA 99350
http://www.bentonrea.org/

Big Bend Electric Coop, Inc
P O Box 348
Ritzville, WA 99169
http://www.bbec.org/

Chewelah Light Department
Box 258
Chewelah, WA 99109
http://www.cityofchewelah.org/electric/default.aspx

City of Blaine
1200 Yew Avenue
Blaine, WA 98230
http://www.cityofblaine.com/index.aspx?NID=91

City of Centralia
1100 North Tower Avenue
Centralia, WA 98531
http://www.centraliaguide.com/centralia/departments

City of Cheney
112 Anderson Road
Cheney, WA 99004-1870
http://www.cityofcheney.org/light

City of Ellensburg (x)
501 North Anderson Street
Ellensburg, WA 98926
http://www.ci.ellensburg.wa.us/utilities/energyserv.cfm

City of Milton
1000 Laurel Street
Milton, WA 98354
http://www.cityofmilton.net/page.php?id=86

City of Port Angeles
P O Box 1150
Port Angeles, WA 98362
http://www.cityofpa.us/pwEUtil.htm

City of Richland
P O Box 190
Richland, WA 99352
http://www.ci.richland.wa.us/richland/electric/

City of Sumas
P O Box 9
Sumas, WA 98295
http://cityofsumas.homestead.com/Index.html

Columbia Rural Elec Assn, Inc
115 E. Rees Ave.
Walla Walla, WA 99362
http://www.columbiarea.com/

Coulee Dam Light Department
300 Lincoln Ave
Coulee Dam, WA 99116
http://www.grandcouleedam.org/index.html

Elmhurst Mutual Power&Light Co
120 South 132nd Street
Tacoma, WA 98444
http://www.elmhurstmutual.org/

Inland Power & Light Company
320 E. Second Ave
Spokane, WA 99202
http://www.inlandpower.com/

Lakeview Light & Power
11509 Bridgeport Way SW
Lakewood, WA 98499-3041
http://lakeviewlight.com/

McCleary Light & Power
100 South 3rd Street
McCleary, WA 98557
http://www.cityofmccleary.com/

Modern Electric Water Company
P O Box 14008
Spokane, WA 99214
http://www.mewco.com/

Nespelem Valley Elec Coop, Inc
P O Box 31
Nespelem, WA 99155
http://www.nvec.org/

Ohop Mutual Light Company
34014 Mountain Highway East
Eatonville, WA 98328

Okanogan County Elec Coop, Inc
P O Box 69
Winthrop, WA 98862
http://www.okanogancounty.org/

Orcas Power & Lgt Cooperative
183 Mt Baker Road
Eastsound, WA 98245
http://www.opalco.com/

Parkland Light & Water Company
P O Box 44426
Tacoma, WA 98444
http://www.plw.coop/

Peninsula Light Company
P O Box 78
Gig Harbor, WA 98335
http://www.penlight.org/

PUD No 1 of Asotin County
P O Box 605
Clarkston, WA 99403-0605
http://www.asotinpud.org/

PUD No 1 of Benton County
P O Box 6270
Kennewick, WA 99336
http://www.bentonpud.org/

PUD No 1 of Chelan County
P O Box 1231
Wenatchee, WA 98807-1231
http://www.chelanpud.org/

PUD No 1 of Clallam County
P O Box 1090
Port Angeles, WA 98362
http://www.clallampud.net/

PUD No 1 of Clark County
P O Box 8900
Vancouver, WA 98668-8900
http://www.clarkpublicutilities.com/

PUD No 1 of Cowlitz County
961 12th Avenue
Longview, WA 98632
http://www.cowlitzpud.org/

PUD No 1 of Douglas County
P O Box 1119
Bridgeport, WA 98813
http://www.douglaspud.org/

PUD No 1 of Ferry County
P O Box 1039
Republic, WA 99166-1039
http://www.fcpud.com/

PUD No 1 of Franklin County
P O Box 2407
Pasco, WA 99302-2407
http://www.franklinpud.com/

PUD No 1 of Grays Harbor Cnty
P O Box 480
Aberdeen, WA 98520-0109
https://www.ghpud.org/

PUD No 1 of Kittitas County
1400 East Vantage Highway
Ellensburg, WA 98926
http://www.kittitaspud.com/

PUD No 1 of Klickitat County
1313 South Columbus Avenue
Goldendale, WA 98620
http://www.klickpud.com/

PUD No 1 of Lewis County
321 Northwest Pacific Avenue
Chehalis, WA 98532
http://www.lcpud.org/

PUD No 1 of Mason County
N 21971 Highway 101
Shelton, WA 98584
http://www.masonpud1.org/

PUD No 1 of Okanogan County
P O Box 912
Okanogan, WA 98840
http://www.okanoganpud.org/

PUD No 1 of Pend Oreille Cnty
P O Box 190
Newport, WA 99156
http://www.popud.com/

PUD No 1 of Skamania County
P O Box 500
Carson, WA 98610
http://www.skamaniapud.com/

PUD No 1 of Snohomish County
P O Box 1107
Everett, WA 98206
http://www.snopud.com/

PUD No 1 of Wahkiakum County
P O Box 248
Cathlamet, WA 98612

PUD No 1 of Whatcom County
1705 Trigg Road
Ferndale, WA 98248
http://www.pudwhatcom.org/

PUD No 2 of Grant County
P O Box 878
Ephrata, WA 98823
http://www.gcpud.org/

PUD No 2 of Pacific County
P O Box 472
Raymond, WA 98577
http://www.pacificpud.org/

PUD No 3 of Mason County
P O Box 2148
Shelton, WA 98584
http://www.masonpud3.org/

Puget Sound Energy, Inc (x)
P O Box 97034 (PSE-08S)
Bellevue, WA 98009-9734
http://www.pse.com

Ruston Electric Utility
5117 North Winnifred Street
Ruston, WA 98407
http://www.ruston.org/power/

Seattle City Light
PO Box 34023
Seattle, WA 98124-4023
http://www.seattle.gov/light/

Tacoma Power
3628 S. 35th Street
Tacoma, WA 98411
http://www.mytpu.org/

Tanner Electric Cooperative
P O Box 1426
North Bend, WA 98045
http://www.tannerelectric.coop/

Town of Eatonville
P O Box 309
Eatonville, WA 98328
http://www.eatonville-wa.gov/light

Town of Steilacoom
1030 Roe Street
Steilacoom, WA 98388-4010
http://www.townofsteilacoom.com/town_offices/public_works.htm

Vera Water & Power
P O Box 630
Spokane Valley, WA 99037
http://www.verawaterandpower.com/

Natural Gas Only Providers

Cascade Natural Gas
222 Fairview Avenue North
Seattle, WA 98109
http://www.cngc.com/

City of Buckley
933 Main St.
PO Box 1960
Buckley, WA 98321
http://www.cityofbuckley.com/documents/67.html

Northwest Natural Gas
PO Box 6017
Portland, OR 97228
https://www.nwnatural.com/

Websites

Websites

Department of Commerce, Weatherization:
http://www.commerce.wa.gov/site/500/default.aspx

Washington State University Energy Extension
http://www.energy.wsu.edu/

Northwest SEED
http://www.nwseed.org/

US Energy Information Administration
http://www.eia.doe.gov/

Energy Star
http://www.energystar.gov/

US Department of Energy
Energy Efficiency and Renewable Energy
http://www.eere.energy.gov/

Lawrence Berkeley National Laboratory
Home Energy Saver
http://hes.lbl.gov/

Affordable Comfort
http://www.affordablecomfort.org/